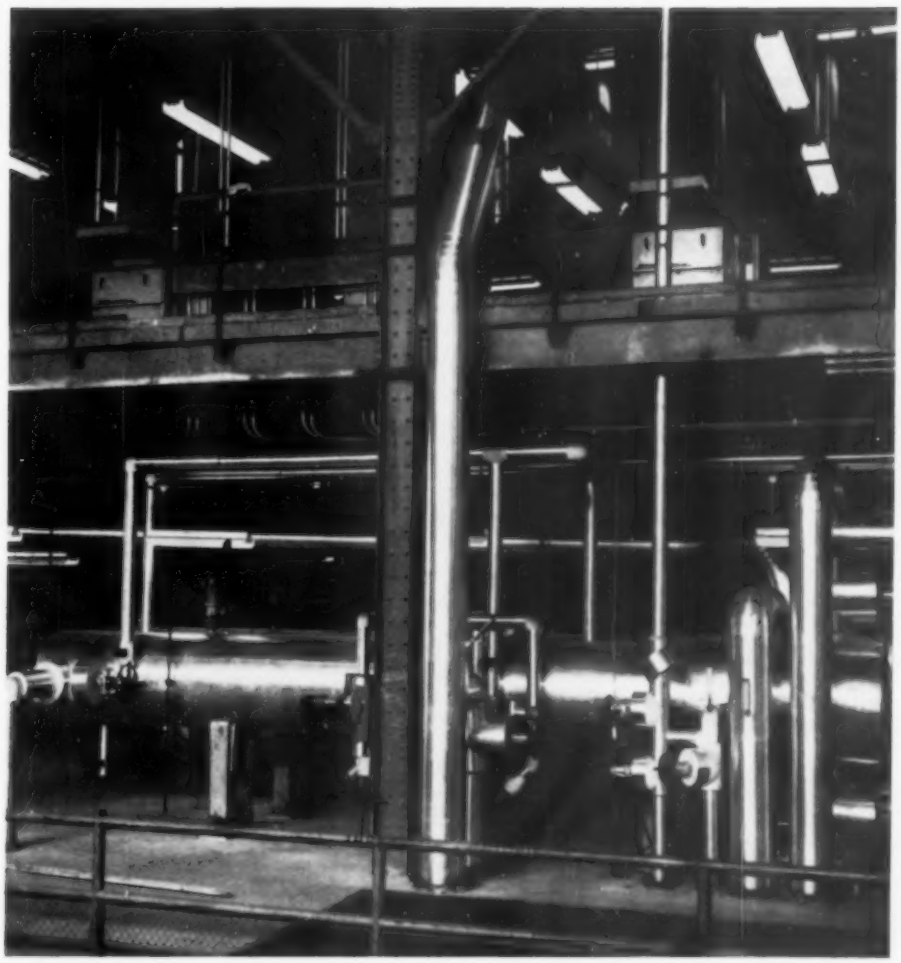
Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

MARCH
1960



CRIST STEAM PLANT, GULF POWER COMPANY -- View showing aluminum jacketed heaters and connecting lines . . . . . SEE DESCRIPTION P. 28

SPI

Air Cleaning – Buyer's Guide . . . . P. 33

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When piping costs come close to the million mark — when the installation is vast, and the leeway for error is small — a piping job must be right from the start to finish. Grinnell assures this through complete one-company control and responsibility. From interpretive engineering — through exclusive methods of prefabrication and testing of pipe and hanger units — to precision assembly and delivery, the job is all done by Grinnell, as only Grinnell can do it. The result: installations of any size, at costs known before you start, with assured performance. Grinnell Company, Inc., Providence, R. I.

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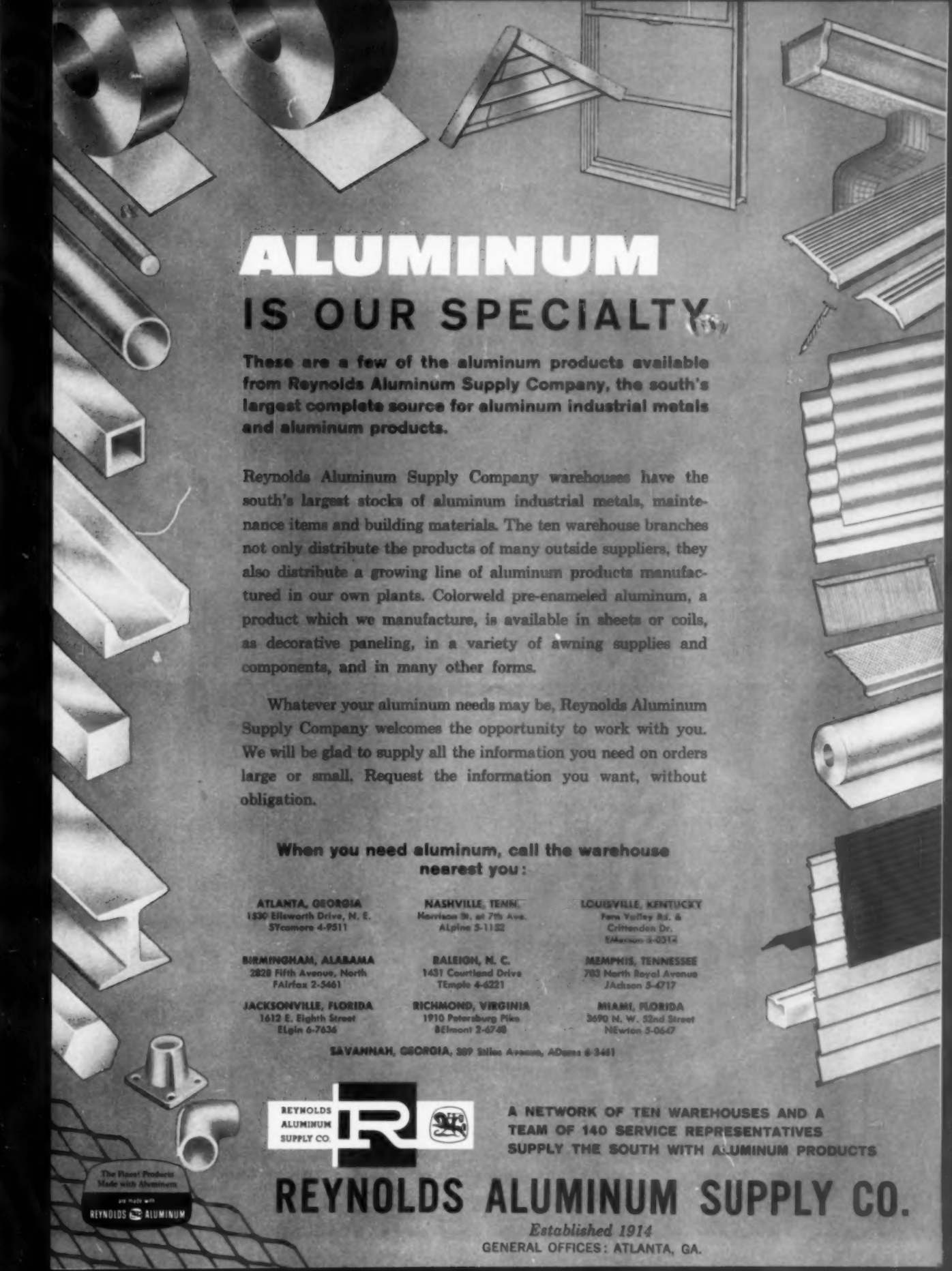

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Many of these Powell Valves are stocked for quick delivery. Contact your city's Powell Valve distributor. Or write directly to us. Our engineers will quickly solve your industry's flow control problems in handling water, oil, gas, air, steam, corrosive fluids.

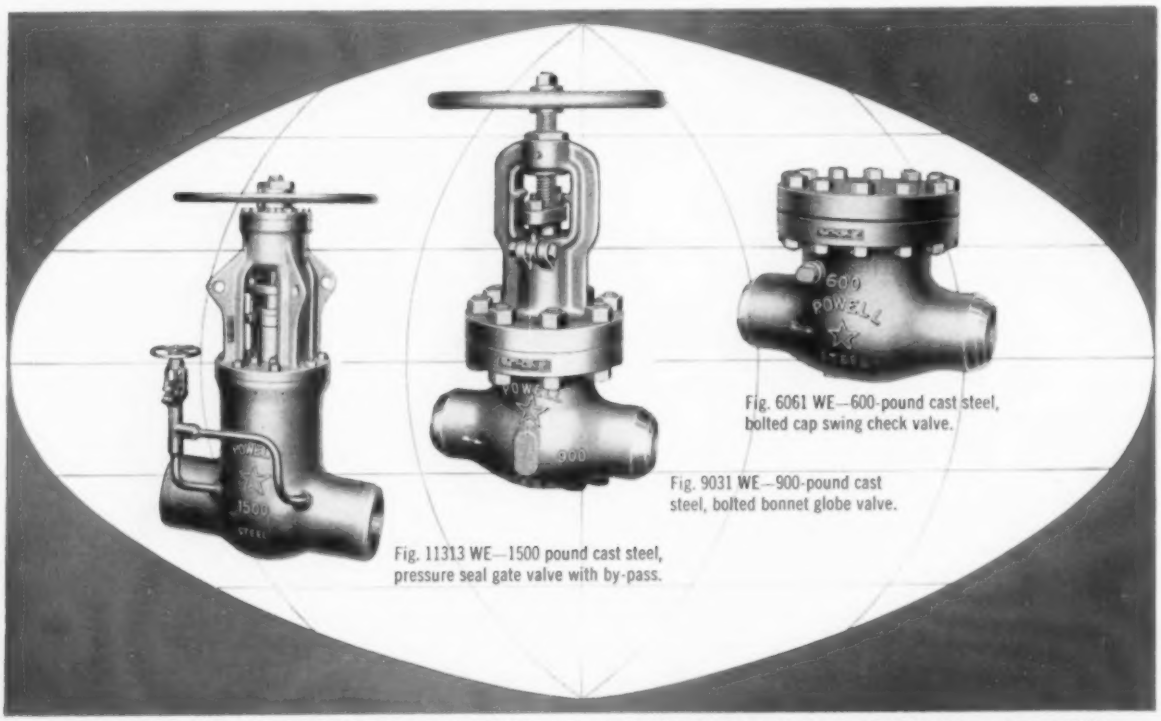

Fig. 11313 WE—1500 pound cast steel, pressure seal gate valve with by-pass.

Fig. 9031 WE—900-pound cast steel, bolted bonnet globe valve.

Fig. 6061 WE—600-pound cast steel, bolted cap swing check valve.

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Facts and Trends

March, 1960

◆ MORE ISOTOPES — Oak Ridge National Laboratory, the nation's principal supplier of radioisotopes, shipped 299,366 curies of this valuable material during 1959, representing a 31 per cent increase over the amount shipped the previous year.

Radioisotopes represent the first extensive civilian and industrial application of nuclear energy. A marked increase has been noted in the number and variety of applications in industry, agriculture, medicine and science.

◆ TANTALUM — Seamless tantalum tubing in lengths up to 60 feet have recently been produced by Calumet & Hecla, Inc.'s Wolverine Tube Division. Previously, seamless tantalum tubing was available only in shorter lengths.

Tantalum has long been used in chemical process equipment because of its excellent corrosion resistance. It is virtually unaffected by highly corrosive acids of all kinds. Seamless tantalum tubing is made by extruding a solid piece of metal through a die, and thus it is free from welds and joints.

◆ INSULATING BOARD — A completely new, inorganic insulating sheet material, that combines light weight and structural strength, has been announced by Union Asbestos & Rubber Company, Fibrous Products Division.

Known as Unarcoboard, the 100 per cent incombustible board can be used for ovens, duct work, firewalls, fireproofing structural steel, heat screens, housings and breechings. It will not burn, rot, mold, or sustain vermin. The structure of the new board is homogeneous throughout, providing uniform control of heat transfer. Structural properties are practically unaffected by water, steam, fumes or temperatures up to 1200 F.

◆ ALUMINUM JOINTS — What are the best ways to mechanically join aluminum parts? This question and others about mechanical fastening methods for aluminum are answered in a new technical handbook, "Mechanical Joining of Aluminum."

The illustrated 32-page book covers nails and pins, metal stitching, mechanically formed joints and architectural fasteners. It is available on letterhead request from Reynolds Metals Company, Dept. PRD-28, Richmond 18, Va.

◆ NEW EXCITER — A new and heretofore untried method of securing generator excitation through a separate winding placed in the generator stator slots was described at the Winter AIEE Meeting by F. I. Biggs and P. I. Nippes of the Elliott Company. The separate winding was placed in an 11,500 kw generator in the summer of 1959.

Output from this winding was used both as a source of high frequency a-c power and, through a rectifier, as excitation for the machine. The voltage contained no fundamental (60 cycle) frequency, but was composed of third harmonics of the fundamental plus a small quantity of other odd harmonics. Such harmonic power could drive motors at speeds higher than obtainable from 60 cycle power, and when rectified, it could supply direct current without the need of high voltage transformers.

(Continued on Page 6)

ALLIS-CHALMERS

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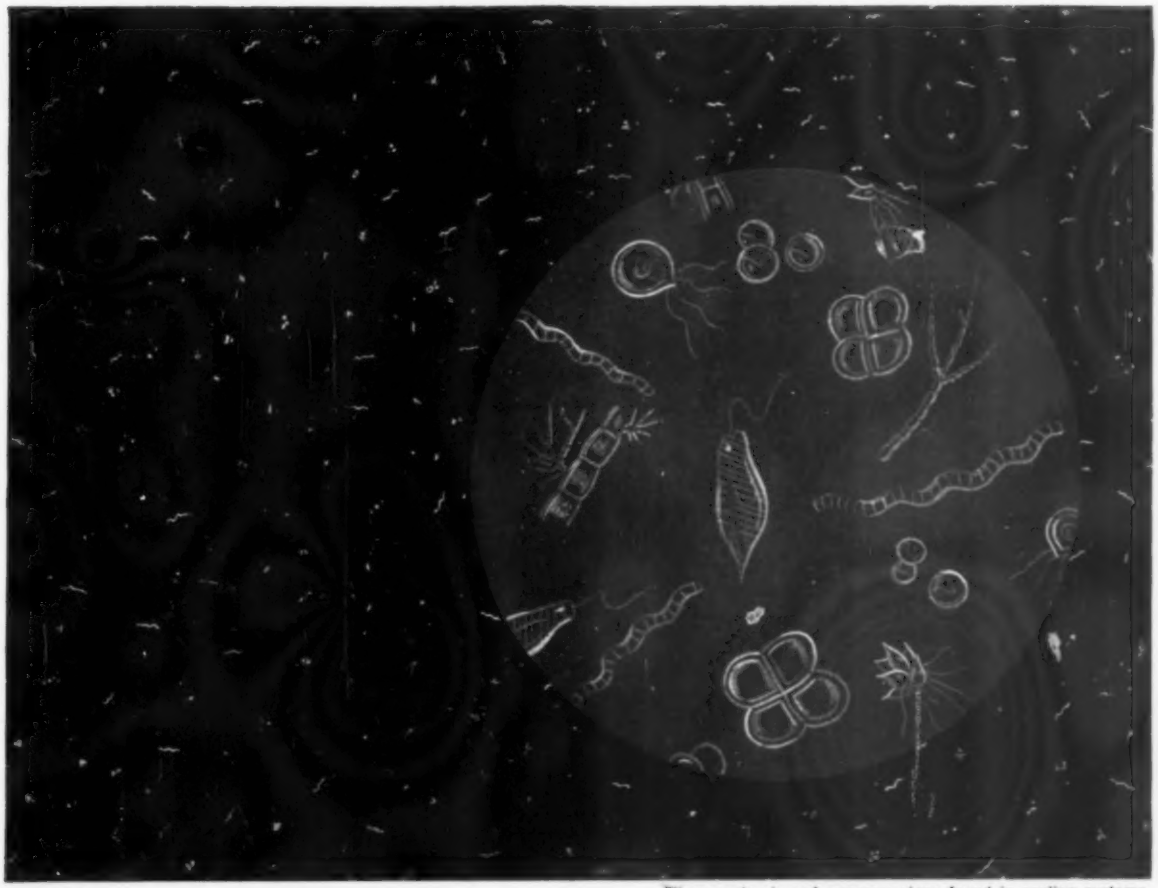


Microscopic view of common algae found in cooling systems.

Allis-Chalmers No. 120 Series Algaecide brings

death to all algae

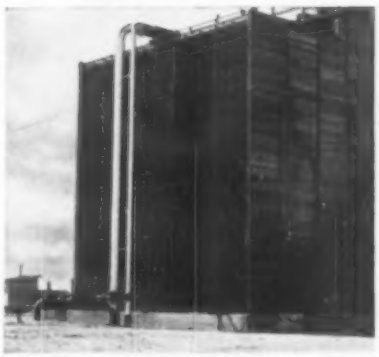
Lethal to more algae than any other algaecide! Only 2 to 5 ppm of this amazingly effective liquid does the job . . . proves the ideal solution to problems of plugged pump strainers, fouled heat exchanger tubes and coated cooling tower slats.

No expensive feeders needed . . . no application specialists required. Use pump, drip-feed or manual feed.

Safe? Even in its concentrated form, Allis-Chalmers No. 120 Series Algaecide is only a mild irritant to skin and hands. Economical, too, since there's no loss of its toxic quality on passage through the tower.

No worries about harmful side effects. Has low toxicity to fish or animals and is nonoxidizing and corrosion inhibiting. Developed after a thorough program of research and field testing—proved in over 4 years of use as the most toxic to all known organisms in cooling systems.

You can purchase No. 120 Series Algaecide directly from your nearby Allis-Chalmers office or write **Allis-Chalmers,** Power Equipment Division, Milwaukee 1, Wisconsin, for help on any of your water conditioning chemicals, equipment or service problems.



Scale and corrosion problems in cooling systems are covered in Allis-Chalmers Informational Bulletin No. 74-A, "Water Treatment for Cooling Towers." Write for your copy today.

Facts and Trends (Continued)

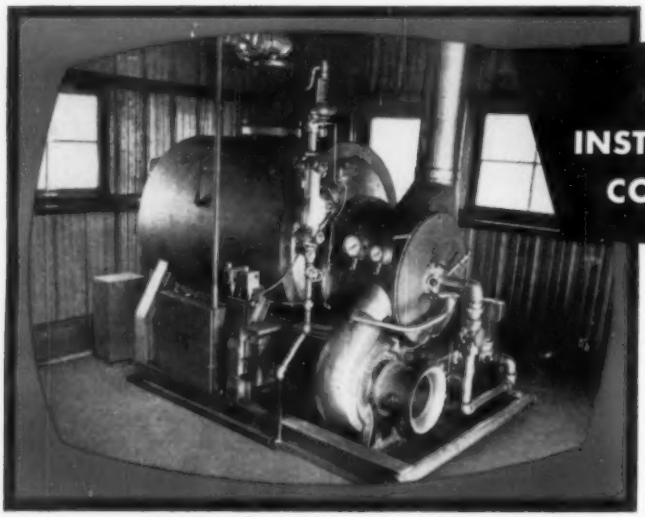
◆ INDUSTRIAL GROWTH — Indications of the continued economic growth of Georgia may be found in year-end figures on electric consumption released by the Georgia Power Company, which provides electric service for 90 per cent of the state.

The total consumption of electricity by customers of the company in 1959 amounted to 10 billion kilowatt-hours as compared with the previous record of 8.9 billion set in 1958, a gain of 12 per cent. Residential customers used 2.4 billion kilowatt-hours, a gain of 5.9 per cent over the previous year. Commercial and industrial customers used 5.8 billion kilowatt-hours, an increase of 14.2 per cent.

◆ GRAB BAG? — Construction of municipal sewage treatment projects to help clean up the nation's rivers probably would go ahead more rapidly without the prospect of federal grants. Hope for federal funds can cause a community to defer its own construction plans and thus delay, perhaps indefinitely, a much needed treatment facility.

Under whatever procedure the grants are allotted, recipient communities fall behind those which have already gone ahead on their own initiative. And those which have not waited for federal aid must then help to pay the costs of grants to the others. This shuffling of public funds, in the name of pollution control, is an unwarranted use of tax revenues for the benefit of those who choose not to meet 100 per cent of their own obligations.

(Continued on Page 11)



CUT STEAM GENERATOR INSTALLATION AND OPERATING COSTS . . . SAVE SPACE WITH

VAPORMATIC COIL-N-SHELL STEAM GENERATOR

You save on installation costs because the Coil-N-Shell requires no special foundation, since the entire unit is assembled on steel skids and shipped ready to fire-up when feedwater, fuel, steam and electric lines are connected. Forced draft fan eliminates the expense of a costly high stack. Its compact design and size saves valuable floor space. Lower operating costs are the result of fuel economy and minimum maintenance due to easy accessibility of all parts for inspection, adjustment or minor repairs.

The Coil-N-Shell Vapormatic generates steam from a cold start in ten minutes and is ready for line service immediately. It is completely automatic and all sizes have modulating controls as standard equipment. Available with gas, light oil or combination gas-oil fuel burning systems. Flow rating selection between 1725 to 10,350 pounds of steam per hour (35 to 300 HP). Available at selective outlet pressure of 5 to 150 psig.

No other steam generator offers so many benefits for so little cost. Write for bulletin 582 CSB for complete specifications and operating data.

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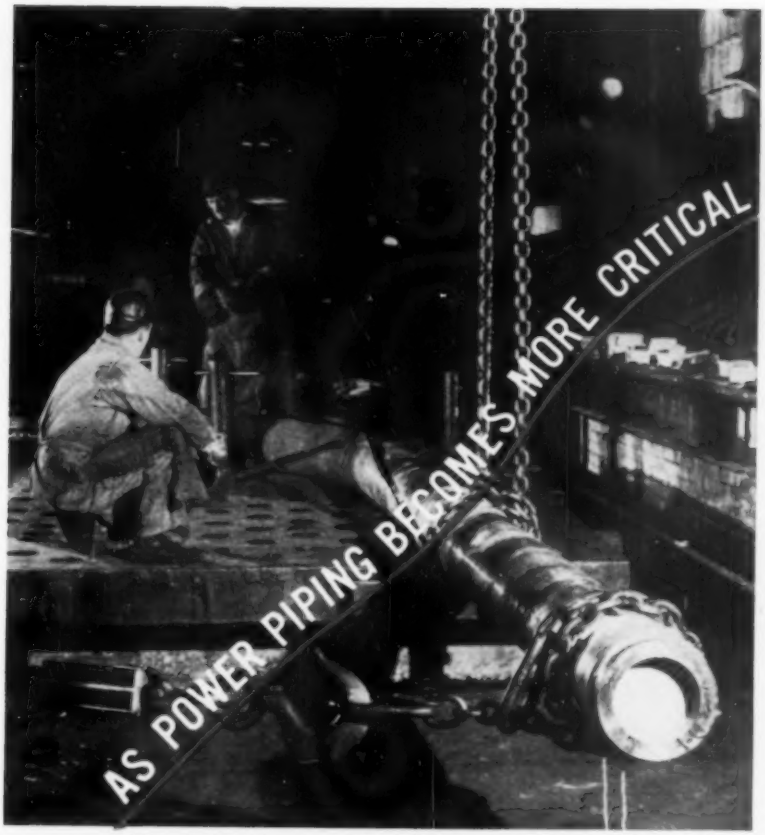

A length of stainless steel piping is bent to close tolerances at Kellogg's Jersey City shops. Dam in pipe end retains inert gas introduced to prevent oxidation.

KELLOGG'S PIPE BENDING TECHNIQUES KEEP PACE

Bending stainless, chrome-moly, and carbon steel power piping to meet exacting specifications of length and wall thickness, as well as contour, is a Kellogg skill reflected in a higher quality and lower cost product.

Among the advanced fabricating techniques pioneered by Kellogg at its Jersey City shops is the use of inert gas to purge pipe interiors of oxygen during the heating and bending cycle. This technique assures freedom from internal scaling and provides a clean interior surface.

By its ability to predetermine bending effects such as pipe wall thinning, cross section variations and pipe stretch, Kellogg maintains specification requirements and top quality while minimizing bending costs.

Kellogg welcomes inquiries on its complete design, fabrication, and erection service to the power piping industry from consulting engineers, engineers of power generating companies, and manufacturers of boilers, turbines, and allied equipment.

Operator checks pressure of inert gas being forced through piping during heating to prevent internal scaling. Gas is also retained in the piping during bending.

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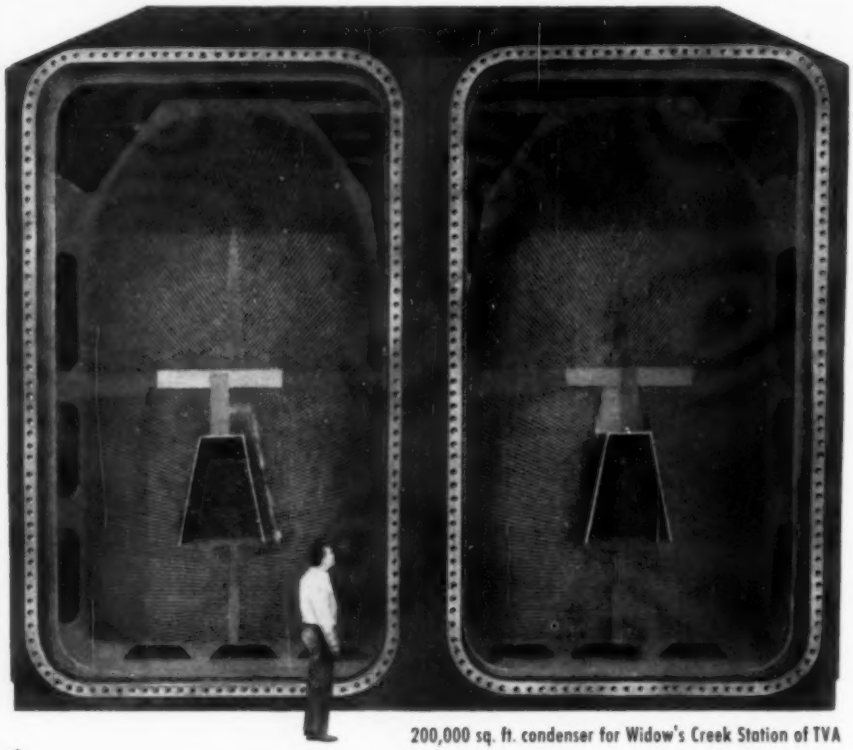
POWER PIPING—THE VITAL LINK

3 STORIES HIGH



200,000 sq. ft. condenser for Widow's Creek Station of TVA

or BROAD and LOW

YUBA CONDENSERS—with the most flexible tube bank layout in the industry—designed to fit any plant or space requirements

This is a three story high, twin-bank condenser—just one of many tube bank layouts possible with Yuba Condensers—most flexible in the industry. Whether you require a giant condenser or a small one, in a single or multiple pass or axial flow design—no matter what the size, type or service conditions, Yuba's flexible design paces the progress in the power industry.

Yuba's twin-bank tube layout, for example, permits turbine exhaust steam to flow unobstructed, with equal distribution throughout the entire tube bank with a free flow to bottom of condenser and into hotwell, where it reheats and deaerates condensate. In Yuba's deaerating condensers, the oxygen in the condensate is guaranteed to be less than 0.005 cc per liter. This design is patented.

For that extra performance, Yuba staggers the tube support plates—reducing harmonics—eliminating vibration. This is just another reason Yuba surface condensers have been installed all over the world in plants of many sizes. For full details, contact Yuba today.

Other Yuba products for steam power plants include Feedwater Heaters, Evaporators, Expansion Joints, Cranes, Tanks, Structural Steel and scores of other items.

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1959 TOWER TESTS

Show Marley's Plus Performance Value

Here is the RECORD OF PERFORMANCE . . . consecutive results of all acceptance tests of Marley industrial Cross-Flow cooling towers made in 1959. This tabulation certifies Marley's ability to rate towers correctly and its single-minded purpose of applying them exactly as rated. Here are factual reports from 27 Marley installations in all parts of the country. Their specified capacities, operating conditions and types of service are as diversified as their geography, but tests uniformly emphasize the fact that these customers received a performance bonus that points up Marley Cross-Flows as vital investments in plant capacity and operating efficiency.

TEST NO.	TYPE OF SERVICE AND LOCATION	SPECIFIED CONDITIONS				TEST RESULT[4]	
		Gallons Per Minute	Hot Water Temp.	Cold Water Temp.	Wet Bulb Temp.	Degrees Cold Water Temp.[5]	Percent Capacity
1[1]	Generating Station—Mid-Atlantic	220,000	97°	78°	70°	+0.35°	+ 3.5%
2	Petroleum Refinery—Gulf Coast	3,500	95°	83°	70°	+ .47°	+ 4.0%
3	Generating Station—Southern	20,000	100°	85°	78°	+ .19°	+ 1.9%
4	Generating Station—Rocky Mtns.	89,300	95°	82°	60°	+1.88°	+ 9.75%
5[2]	Generating Station—S. Atlantic	75,000	113°	90°	74°	+ .20°	+ 1.25%
6	Petroleum Refinery—Gulf Coast	8,600	105.8°	87°	82°	+ .45°	+ 5.8%
7	Appliance Mfg. Plant—E. Central	7,750	95°	85°	78°	+ .40°	+ 5.00%
8[2]	Petroleum Refinery—Gulf Coast	45,000	112°	89°	82.5°	+ .72°	+ 6.65%
9	Generating Station—Mid-Central	62,400	107.5°	90°	76°	+1.10°	+ 7.3%
10	Petroleum Refinery—N. Atlantic	12,900	115°	85°	78°	±0.00°	± 0.0%
11[2]	Meat Packing Plant—North Central	6,000	105°	85°	75°	+ .60°	+ 5.2%
12	Jet Engine Plant—South Atlantic	20,000	95°	85°	79°	+ .40°	+ 6.0%
13	Generating Station—Gulf Coast	65,000	104.6°	87°	76.5°	+ .45°	+ 3.3%
14[2]	Petroleum Refinery—Gulf Coast	17,500	111°	90°	80°	+ .47°	+ 3.5%
15[2]	Petroleum Refinery—North Central	4,150	110°	75°	68°	− .10°	− 0.6%
16	Petroleum Refinery—East Central	19,400	120°	85°	75°	+ .65°	+ 5.5%
17[2]	Petroleum Refinery—Gulf Coast	57,500	120°	85°	79°	− .17°	− 1.3%
18	Petrochemical Plant—Gulf Coast	15,000	115°	90°	78°	+ .70°	+ 5.3%
19[2]	Air Conditioning—Mid-Atlantic	3,600	95°	85°	78°	+ .70°	+12.6%
20[2]	Atomic Test Facility—North West	70,000	112°	87°	65°	+1.50°	+ 5.9%
21	Chemical Plant—Gulf Coast	1,350	155°	86°	81°	+ .10°	+ 1.4%
22	Air Conditioning—Gulf Coast	7,000	93.5°	86°	80°	+ .30°	+ 6.0%
23[3]	Petroleum Refinery—Central	60,000	120°	80.6°	70°	+ .25°	+ 1.84%
24	Paper Mill—South Central	10,000	116°	86°	79°	+ .05°	+ 0.25%
25	Air Conditioning—South Central	6,000	105°	85°	78°	+ .25°	+ 2.7%
26	Generating Station—Mid-South	38,000	103.2°	90°	80°	+ .70°	+ 5.4%
27	Generating Station—West Coast	34,000	96°	80°	70°	+ .42°	+ 3.75%

NOTES: 1) Total capacity four identical towers: results are average of tests conducted on two towers. 2) Cooling Tower Institute observer present during tests. 3) Test of tower remodeled to increase performance after more than 13 years of service. 4) Test results are adjusted to specified conditions. 5) + indicates lower cold water temperature than specified; — indicates higher cold water temperature than specified.

"TEST YOUR TOWER"—a brochure that details the Marley method of tower testing, and "ANALYZE YOUR BIDS"—one that presents a logical means of pre-purchase evaluation, should be in every engineering library. Your Marley engineer will gladly furnish copies or just send a request to

THE MARLEY COMPANY MARLEY **KANSAS CITY, MISSOURI**

BRAXON

stops scale and corrosion

Braxon conditions water, protects boilers

BRAXON is a specially formulated feedwater treatment that conditions water to remove and prevent scale formation and corrosion in boilers. BRAXON bases its effectiveness on phosphate and carbonate control . . . maintaining the proper alkalinity and softness in the boiler water. Special BRAXON formulas inhibit the tendency of some feedwaters to produce foaming and carryover. No single formula can be applied successfully to all the various types of boiler feedwater, so BRAXON formulas are prepared specifically for use in *your* plant after a careful analysis and study of raw water used. Your BRAXON formula will keep your boiler operating at top efficiency, eliminating shut-downs and repairs caused by corrosion and scale. . . BRAXON can save your company money.

Write today and request that an Anderson service engineer make an analysis and recommendations for your plant's water treatment. There's no cost for this service.

SPECIALISTS IN MAKING WATER BEHAVE

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Facts and Trends — Continued from Page 6

◆ ENGINEERING EDUCATION — M. L. Manning of the South Dakota State College described changes in engineering education at the Winter General Meeting of AIEE.

The old distinctions between mechanical, electrical and civil engineering have partially vanished and the basic principles of engineering, together with the science and mathematics subjects, can easily occupy a full four year program if the humanities and social studies are included. Specialization will be deferred to graduate work, supplemented by on-the-job educational programs sponsored by industry.

◆ FILM ON FUEL CELL — A new 16mm seven-minute sound color film about electrical energy from fuel cells has been produced by Allis-Chalmers audio-visual section. The film shows researchers as they tested and hand-built the fuel cell equipment first applied in a tractor for demonstration purposes.

Although the basic theory of fuel cells has been known for 120 years, refinements of the original concept by Allis-Chalmers research laboratories has made this method of producing electricity from a chemical reaction practical. Prints of the film, "The Fuel Cell Tractor," are available for showing before interested groups from Allis-Chalmers sales offices.

◆ CHEMICAL PLANT CONTROL — The first computer-controlled chemical plant in the United States has begun start-up operations at Luling, La. By use of the computer, Monsanto Chemical Co. expects to achieve maximum productivity from its plant investment at minimum operating cost.

The computer achieves this by continually monitoring the process conditions, making numerous calculations, and automatically adjusting the controls for optimum results. The computer was manufactured by the Ramo-Woolridge Division of Thompson Ramo Woolridge Inc. Such systems have many applications in the chemical, petroleum, petrochemical, steel, nuclear, electric power, aircraft, missile, cement, and other industries.

◆ EPOXY RESINS — The production of epoxy resins for 1960 will be practically double the annual figure for two years ago, it was predicted by Richard Schumer, president of Permagile Corporation of America. The plastics official said the upsurge in production would be chiefly sparked by the chemical, food and beverage, paper, metalworking, oil, cosmetic, pharmaceutical, dyeing and laundry industries.

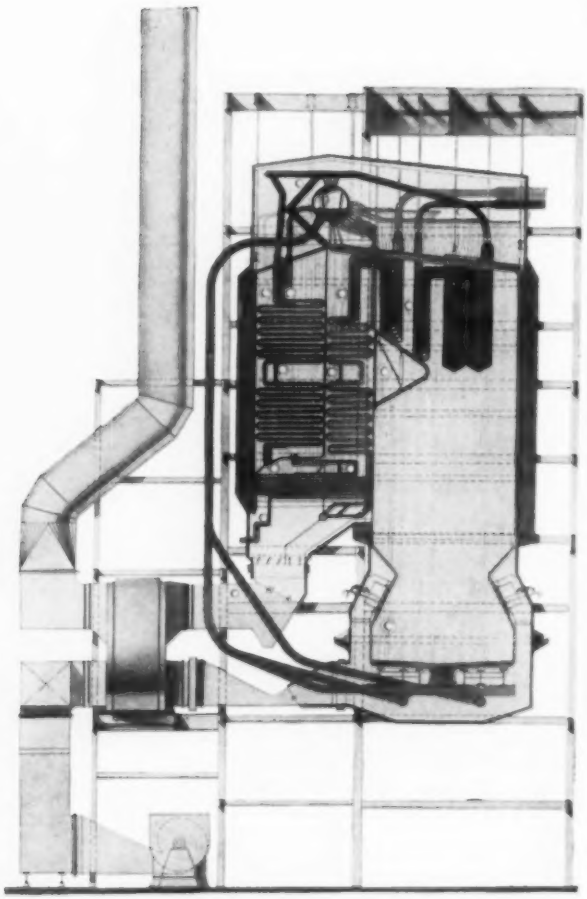
Within a five year period, Mr. Schumer pointed out, epoxy resins have emerged from a status of being relatively unknown to a position of steadily growing importance. The successful performance of epoxy resins is rapidly winning the confidence of plant engineers and maintenance men throughout the country.

◆ CHEAPER COOLING — A new hydrogen gas control system that is safer, 15 per cent less expensive to install, and one-third the size of units now cooling medium capacity steam turbine-generators, has been designed by General Electric Company engineers.

Design engineers achieved the safe, compact unit by separating the electrical and the gas controls, and by eliminating unnecessary instrumentation. The heart of the new system will be mounted in two vertical compartments alongside the generator. The electrical instruments will be mounted in one, the gas controls and associated piping in the other, thus obtaining maximum safety. By positioning the units close to the generator, engineers cut down on the length of piping and the number of welds in gas lines.

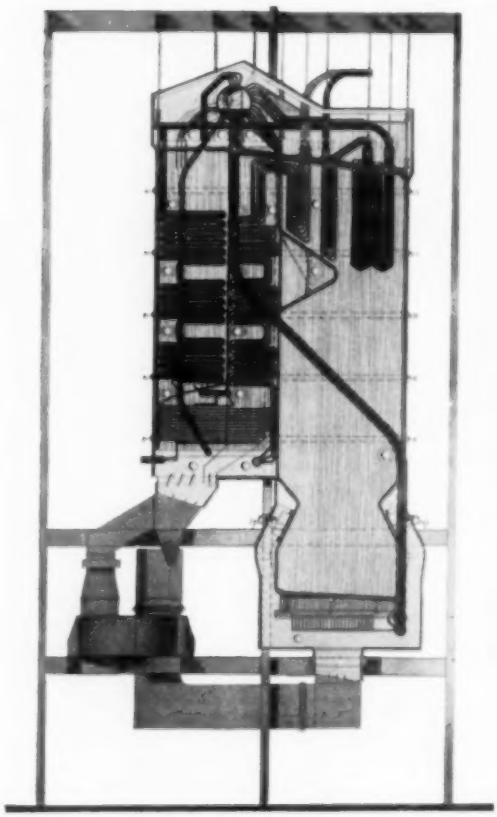
(Continued on Page 14)

How The RILEY TURBO FURNACE



Texas Public Utility — 1,200,000 lbs/hr
1005/1005F; 2125 psig — Gas or Oil Fired

- Permits the use at any time of the most economical fuel available — a wide range of coals, lignite, fluid coke, natural gas, blast furnace gas, oil.
- Complete burn out of all combustible material virtually eliminates combustible loss.
- Nearly equal furnace performance with oil, gas or coal firing simplifies steam temperature control.



Florida Public Utility — 680,000 lbs/hr
1005/1005F; 1650 psig — Gas and Oil Fired

A FEW TURBO FURNACE CENTRAL STATION BOILERS INSTALLED AND UNDER CONSTRUCTION

*Delaware City Power Station
Delaware Power & Light Company
Delaware City, Delaware
Units No. 1, 2, 3

*Permian Basin Steam Electric Station
Texas Electric Service Company
Monahans, Texas

*Sterlington Steam Electric Station
Louisiana Power & Light Company
Sterlington, Louisiana

Rockwell Station, Unit No. 6
Manila Electric Company
Manila, Philippine Islands

*North Lake Steam Electric Station
Dallas Power & Light Company
Dallas, Texas
Two (2) Boilers

*Turner Unit No. 4
Florida Power Corporation
Enterprise, Florida

*Little Gypsy Steam Electric Station
Louisiana Power & Light Company
Little Gypsy, Louisiana

Agua Fria Station, Unit No. 3
Salt River Power District
Phoenix, Arizona

Michoud Steam Electric Station
Unit No. 2
New Orleans Public Service, Inc.
New Orleans, Louisiana

*Installed

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Helps To Lower The Cost Per KWH

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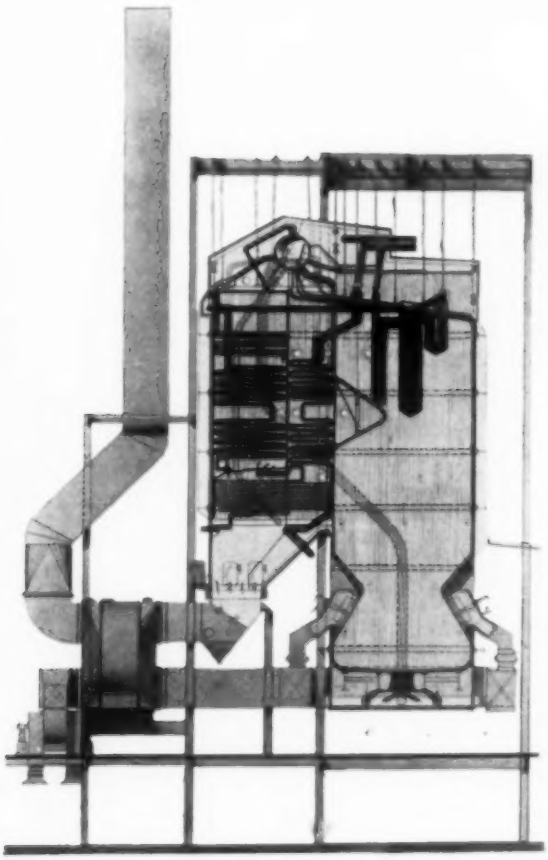
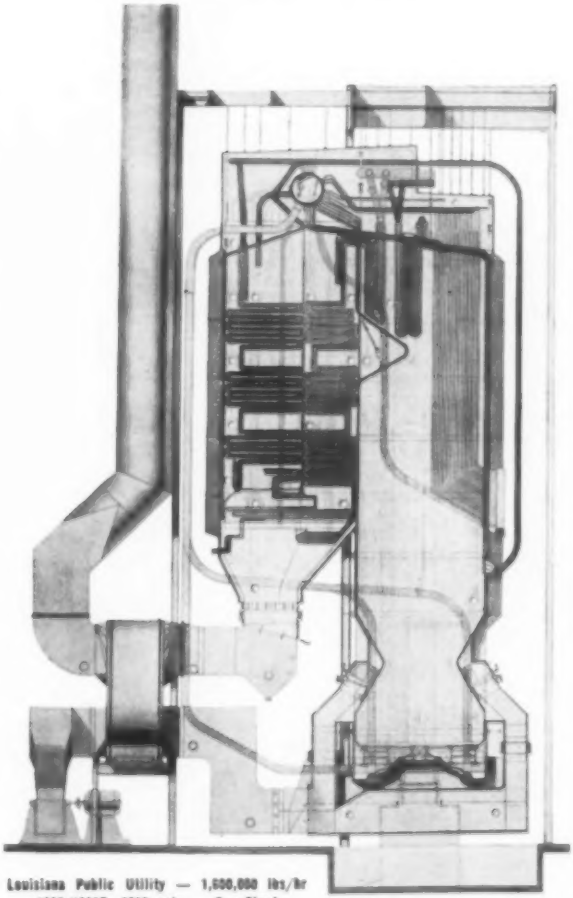
- Prompt ignition and stable flame, even under adverse conditions, assure safe operation.
- Permissable higher furnace heat release rates result in smaller structures for given capacities.
- Almost entire absence of furnace wall deposits eliminates need for wall blowers, sustains high furnace efficiency, keeps uniform furnace performance.
- Opposed firing and uniform firing across the entire furnace width remove the limitations on furnace widths inherent in other firing methods.
- One level burner operation results in lower building costs and ease of operation.



Texas Public Utility — 825,000 lbs/hr
1005/1005F; 1750 psig — Gas and Oil Fired



Louisiana Public Utility — 1,500,000 lbs/hr
1005/1005F; 2350 psig — Gas Fired

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RILEY

STEAM GENERATING & FUEL BURNING EQUIPMENT

Facts and Trends — Continued from Page 10

◆ COST REDUCED — The General Electric Company announced a ten per cent price reduction in published prices for its hydro-generators, effective immediately. M. W. Johnson, general manager of the company's Large Motor & Generator Department, stated that the price reduction was made in recognition of competitive conditions in the market place.

◆ ELECTRIC MEMBRANE — A substantial cost breakthrough has been achieved in saline water conversion by Ionics, Inc. The development of an electric membrane process, combined with greater installation economy and more efficient pumping methods, provides potable water at lower costs in quantities up to several million gallons per day.

The basic principle of the electric membrane method of demineralization is the movement of salt or mineral ions by an electric current (through a number of stacks or special membranes) out of one stream which is being desalted into a second stream, which becomes a brine and is discarded. The electric membrane process has only recently been placed in a better competitive position for industrial service through lower pumping costs. Ingersoll-Rand Co. claims pumping cost reductions as high as 30 per cent. Recent installations have been made for purifying boiler feedwater in new power generating stations.

◆ NYLON BEARING CAGES — One of the newest uses for glass-filled nylon is in the manufacture of cages for thrust bearings. A product of The Garlock Packing Company, the cages are available for either roller or ball bearings and in a wide range of sizes.

Chief among the many advantages of using glass-filled nylon is that tramp metal invading the bearing area imbeds itself into the plastic. This imbedment removes ordinarily loose metal particles from circulation, greatly reducing wear of adjoining metal surfaces. If the bearing cage should fail, the problem of metal particle entrainment is obviated.

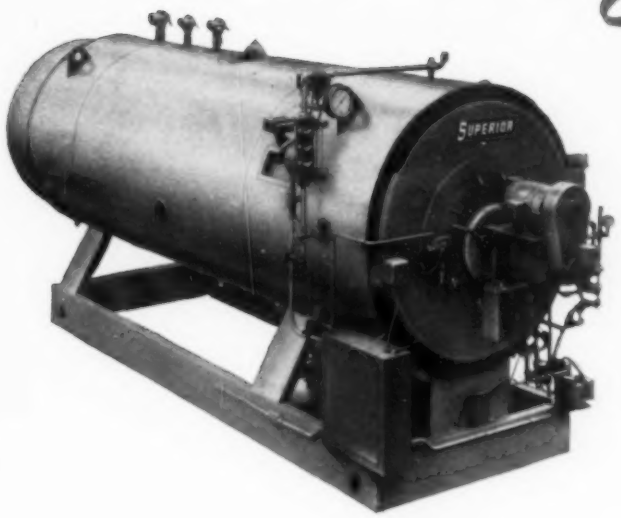
◆ EMPLOYEE SECURITY PAYMENTS — Private industry in the United States paid an estimated $15.4 billion in 1959 for pension, welfare, and unemployment benefits, the National Industrial Conference Board reports in its latest chart in its weekly "Road Maps of Industry" series.

These payments, which increased by $1.6 billion between 1958 and 1959, accounted for 6.8 per cent of total employee compensation last year, according to The Conference Board. Exactly one-half of total 1959 employee security payments went into private pension and welfare funds, and more than one-fourth into old age, survivors, and disability insurance. The balance went to unemployment insurance and compensation for injuries.

◆ ALUMINUM SCRAP — With U. S. manufacturers finding new uses for aluminum almost daily, the prospects for future supply might well be of some concern. But in Chicago recently, an aluminum expert predicted that, within 30 years, recovery from scrap alone will yield tonnages exceeding the nation's total 1959 production of the metal.

The reason for this is simple. Every product manufactured today from aluminum goes to provide a vast national metal reserve which, through obsolescence and scrap recovery, will make available a ready supply of re-usable aluminum in future decades. Currently, the aluminum smelting industry recovers about 375,000 tons per year and converts the material into alloys that total approximately one-fifth of U. S. aluminum production.

Write the editors for additional information on any of the above items. SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 8, Ga.



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BOILER SPECIFICATIONS

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- Burn oil or gas, or both ✓
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- 80% thermal efficiency guaranteed ✓
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Many packaged boilers will meet some of the specifications listed here. Superior Packaged Boilers meet them ALL. Today, more and more packaged boilers are being purchased on the specifications of architects and consulting engineers. Those consulting engineers are demanding that packaged boilers "measure up" to design and performance standards which assure buyers both operating economy and long-lived dependability.

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In addition to the Type C, illustrated, Superior manufactures both fire-tube and water-tube boilers in a wide range of sizes which makes it the most complete line of fully packaged boilers available. If you will indicate the capacity in which you are interested, we will be happy to assist in the unbiased selection of boiler equipment suited to your specific operations.

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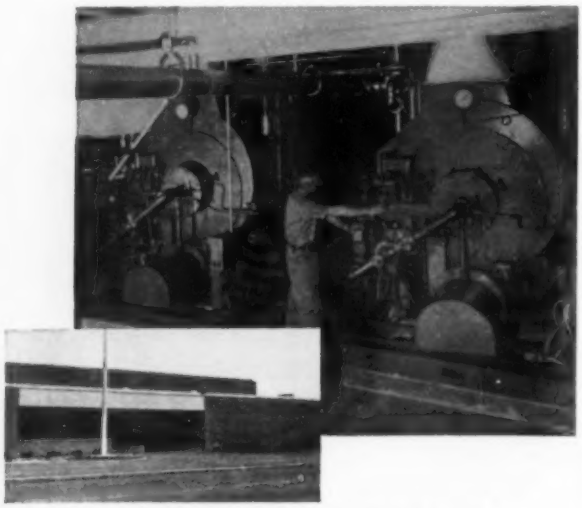
The Cyclotherm Steam and Hot Water Generator is built under one roof with one manufacturing responsibility backing the entire equipment—shipped fire-tested and ready to operate. Up to ⅓ smaller than other package generators of same capacities and needing no excavation, no foundation, no costly stack.

Electronic controls operate the Cyclotherm automatically. On units of 80 HP or more, modulation controls regulate firing rate from 30% to 100% of rated capacity without loss of efficiency. Smaller models automatically *off* when steam demands are satisfied, automatically *on* when more steam is needed. Operation stops if firing sequence is interrupted and unit fails safe. Cyclotherm cuts maintenance costs by up to 50%.

Cyclotherm meets all state requirements, conforms to A.S.M.E. and National Board standards, carries Underwriters' Laboratories label. Burns oil and/or gas. Steam generators: 15 to 750 HP. Hot water Generators: 670,000 to 6,700,000 BTU per hr.



At the Frederick Leighton School, Oswego, N. Y., two 100 HP Cyclotherms keep 21 classrooms and 550 pupils warm and comfortable. Building designed by Ketcham-Miller-Arnold Architects of Syracuse, N. Y.; Consulting Engineer Cedric R. Acheson, also of Syracuse.

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See pages 33-44.

Steel and masonry are combined here for an attractive plant. This Armco Building has 100-foot clear span width.

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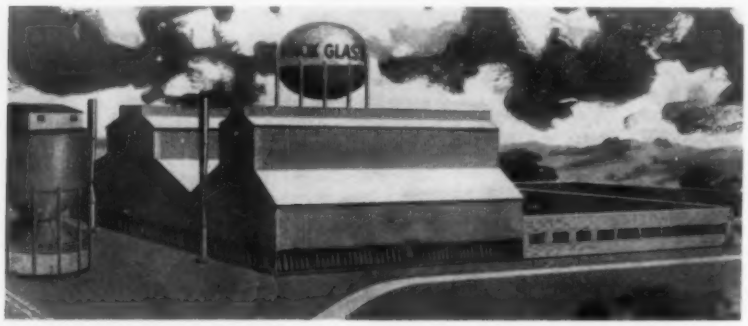

Knox Glass — Atlanta

Plans for the construction of a multi-million-dollar plant near **Forest Park, Georgia,** to manufacture glass containers were announced recently by **Knox Glass, Inc.,** Knox, Pa. The firm will sign a long-term lease for 185,000 square feet of building space on a 30-acre site about a quarter of a mile south of the Georgia State Farmers' Market, immediately south and east of Atlanta.

The plant is designed to serve numerous clients in the Southeast — including Georgia, Alabama, Florida, North and South Carolina, Tennessee, and Virginia. When production gets under way late this year, the plant will employ about 250 men and women. It is estimated Knox will spend $3 million during the plant's first year of operation for payroll, supplies, and services.

Knox produces glass containers for the food, carbonated beverage, beer, liquor, dairy, household chemical, and pharmaceutical industries.

The new, fully-automated plant is designed for future expansion. The initial 185,000 sq ft building will contain two glass melting furnaces with a daily capacity of 200 tons, a batch plant, annealing lehrs or "curing ovens," storage and shipping areas, garages, offices, and other necessary facilities. A railroad siding to be built by Central of Georgia will permit loading and unloading at the plant.

NCG Oxygen Plant To Serve Southwest

A new plant producing high-purity liquid oxygen has been placed on stream in Dallas by **National Cylinder Gas Division of Chemetron Corporation.** The plant also produces high-purity liquid nitrogen and argon.

The installation later can be expanded to meet rapidly increasing requirements of industry in the Southwest area for high-purity gases.

Liquid gases from the plant will be distributed to electronics, metals, power, and petroleum companies and to hospitals and medical centers in the region.

The new installation, at 3301 S. National Street, is located at the site of existing facilities.

Dawbarn Expansion — Va.

Dawbarn Brothers, Inc., Waynesboro, Va., producer of olefin yarns, has just completed its second major expansion of plant facilities in the last four years. The latest expansion adds 50,000 sq ft to the company's plant.

The new plant area will be given over almost entirely to the manufacture of Dawbarn's polypropylenes. The company now has in large-scale production propylene formulations designed for seat covers and various other industrial fabric uses.

In planning its new addition, Dawbarn made provision for easy access via both the Norfolk & Western Railway siding and the superhighway routes that run close by the plant. Four tractor-trailers may be loaded at one time in the new bays, completely protected from the elements. In view of the possibility that future expansion may be needed, Dawbarn recently acquired ten more acres of property immediately behind its present plant.

Hoerner Boxes, Inc., New Plants in Texas & Mo.

Hoerner Boxes, Inc., scheduled two new plants for completion in February. A new sheet plant at **Mission, Texas,** is to start operation about the middle of the month. This 20,000 sq ft facility, in addition to the 40,000 sq ft sheet plant that was scheduled for completion around the first of the month at **Springfield, Mo.,** increases to twelve the total number of plants operated by Hoerner Boxes.

New Electrical Plant Bradenton, Florida

Anchor Manufacturing Company of Manchester, N. H. (a division of Basic Products Company), has just opened a $250,000 plant in **Bradenton, Florida,** to serve the rapidly-rising demand for electrical equipment.

Anchor makes electric meter mountings and testing units widely used in domestic and commercial wiring, along with service entrance brackets and fittings.

The 22,000 sq ft plant can be expanded to four times its size and is, according to Ronald MacKay, executive vice-president and general manager, the first step in an expansion program designed to provide better service to its customers through regional branch plants to be located in selected areas across the country.

The Bradenton plant will insure faster delivery to the Southeastern market. Two reasons are cited for the selection of Florida as the site of the first branch plant: the fast tempo of Florida's construction activities and the state's position in relation to the Latin American market.

Although the major portion of production from both the Bradenton and

(*Continued on Page* 20)

PROBLEM: Protection from high-voltage power failures due to cable overload.

SOLUTION: Build up a dependable power system for today and tomorrow—with high-voltage Anaconda Butyl (AB)-insulated Durasheath cable.

Shutdowns caused by power failures usually entail significant losses: loss of production during shutdown . . . loss of labor during repair time . . . and in some cases, loss of goods in production. This is not to mention cost of repairs, both in labor and in cable. Many such power failures are the result of overloaded circuits—obsolete cables unable to handle the increased loads of today's stepped-up production, or the anticipated needs of tomorrow.

Is your plant's high-voltage electric power system limiting you? Make a careful check of it to find out. Then, if out-of-date or inadequate wiring is a problem, see your Anaconda distributor or the Man from Anaconda—about high-voltage butyl-insulated Anaconda Durasheath.*

High-voltage Anaconda Durasheath (5 kv and up) has been designed to give long life, dependable service. It is insulated with Anaconda Butyl (AB)—resistant to ozone, moisture, heat. Its tough neoprene jacket resists weather, soil conditions, abrasion and mechanical injury.

You can run Anaconda Durasheath from underground to overhead, and into ducts in one continuous run—without splicing. It is light, flexible, easy to handle, economically installed. For further information about Anaconda Durasheath write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

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Durasheath has Anaconda Butyl (AB) rubber insulation

for • extra high resistance against ozone
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• 22% more current-carrying capacity than 70° centigrade insulation

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ANACONDA®

FOR BUTYL-INSULATED DURASHEATH

Manchester plants is geared to demands of the construction industry, it also must supply the additional demand created by the aggressive Adequate Wiring program of the electric utilities and the Edison Electric Institute.

While the Florida plant is presently concentrating on meter mountings of various types and capacities, it will eventually go into production of various types of electrical units destined to upgrade electrical service.

Gulfport Piping — Miss.

First Mississippi Corporation of Jackson is in negotiations to purchase the assets of the Southern Division of Associated Piping and Engineering Company, Gulfport, Miss.

The new concern will be known as the **Gulfport Piping Company,** and will continue under the present management. It will be engaged in the manufacturing and fabrication of certain piping components which are used by power companies, chemical plants and other heavy industries, as well as large commercial firms. The plant's large floor space houses machinery of the latest type. The company was established in Gulfport as the Southern Division of Associated Piping and Engineering Company, a California concern, in late 1957. Citizens of Gulfport voted a $250,000 BAWI bond issue for the building and site. Full operation of the plant did not get underway until the Spring of 1959. Approximately 100 persons are employed. Immediate plans are being made for expansion of the plant.

Pennsalt Chemicals Atlanta, Georgia

Pennsalt Chemicals Corporation is investing about $500,000 in a new blending, packaging and warehousing plant at **Atlanta, Georgia.** Scheduled to go on stream this spring, the Atlanta plant will be the seventh unit devoted to production of Pennsalt specialties added in the past five years.

The Atlanta plant is being constructed on a ten acre site served by a direct rail spur and express highway permitting fast service to area customers. A modern one-story structure, it will provide production and warehousing facilities for Pennsalt's brand-name chemical products.

View of Electronic Communications, Inc. engineering building. New 150,000 square foot manufacturing building under construction in background. (Joe Scheff Photo, Dec. 1959.)

New Florida Plant Dedicated by ECI

Dedication ceremonies for the newly completed 150,000 square foot **Electronic Communications, Inc.,** manufacturing building were held recently at **St. Petersburg, Fla.**

Built at a cost of approximately $1.1 million, the new building will effectively double ECI's manufacturing capability, bringing the total area of its consolidated St. Petersburg, Florida facilities to nearly 200,000 square feet.

ECI moved its executive offices, engineering and manufacturing operations to Florida during the early months of 1957. The company specializes in systems development, advanced voice and data link communications, electronic countermeasures, special purpose computers, electromechanical devices, and related equipment.

In addition to the St. Petersburg and Facsimile Division, both located in Florida, the company maintains two other divisions together with a wholly-owned subsidiary. The Research Division is located in Timonium, Maryland, near Baltimore.

Jet Powered Compressor Station — Kentucky

The Federal Power Commission has given approval of plans of **Columbia Gulf Transmission Company** for construction of a new jet-powered compressor station at **Clementsville, Kentucky.** Incorporating the new type 10,500 horsepower gas turbine being developed jointly by Cooper-Bessemer and Pratt & Whitney Aircraft, this station takes a pioneering step in the gas transmission field.

The new turbine utilizes a modified J-57 jet aircraft engine as the power generator. The tremendous thrust of this gas-fueled unit is converted into rotating horsepower by a specially designed Cooper-Bessemer turbine, which drives a centrifugal compressor.

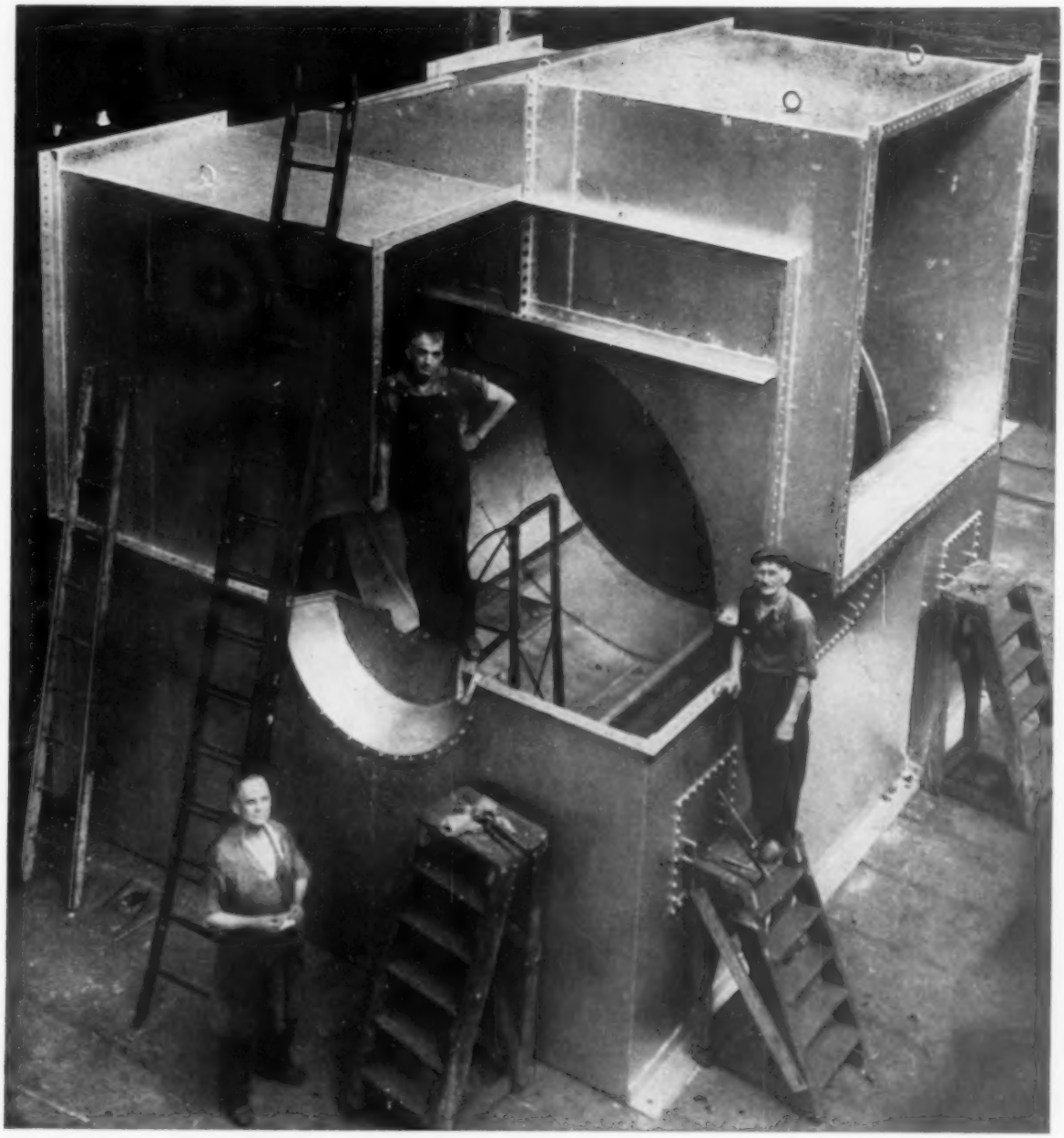
Construction of the Columbia Gulf station will proceed simultaneously with the development work on the gas turbine. It is expected that the facilities will be completed in the summer of 1960.

Florida Furniture Industry Continues to Expand

In the last five years, furniture manufacturing, one of the fastest growing industries in Dade County, has bounded ahead. The industry produces items ranging from spillproof ashtrays to a curved couch large enough to seat a campfire circle. The driftwood and cypress knee era has expanded into the wrought iron and marble age.

Figures released by the Dade County Development Commission indicate there were 169 furniture firms in 1954. Today, there are 317 firms employing 7,177 people earning $22,310,135. Company profits are up to $35,885,000.

Distribution is worldwide. Buyers from throughout the United States recently attended a furniture show here and left behind orders that amounted to $3,800,000. One Miami firm, the Da Vinci Co., makers of wrought iron products, has shipping tickets routed to Hawaii, Indonesia, other foreign places and the United States.



You wouldn't buy a bargain basement parachute... or a cut-rate big game rifle...

Don't choose less than Clarage quality for your mechanical draft service. With anything as vital as uninterrupted operation, it pays big dividends to get the best in equipment. Clarage, a specialist in building forced and induced draft fans, offers you equipment having a long-standing reputation for long-lasting service. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

Reynolds Metals Co. Expansion Nears Completion — Sheffield, Ala.

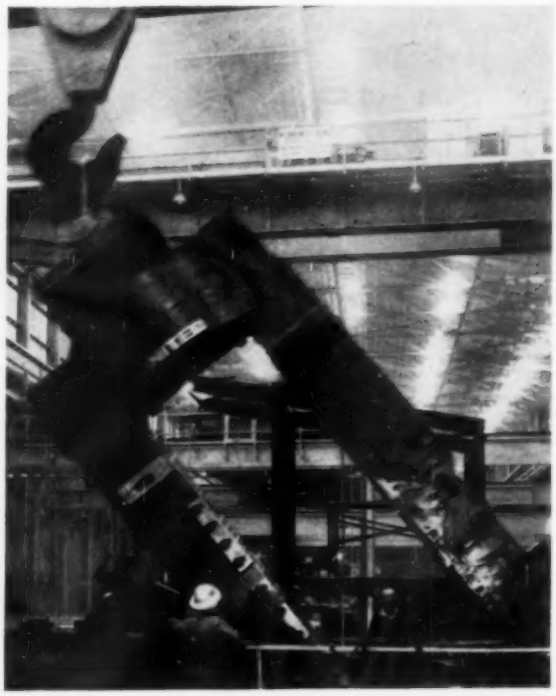
The middle mill for one of the world's largest aluminum rolling hot lines begins to take shape at the big **Reynolds Metals Company Alloys Plant** at Sheffield, Ala., as one 315,000 pound housing is hoisted into position.

This mill will have 130-inch rolls and will roll hot aluminum slabs or plates coming from a 170-inch wide mill, largest of its type in the world.

From the 130-inch mill the rolled aluminum will normally go to a 120-inch four-stand tandem mill, leaving there as coils.

The 130-inch hot mill will be used for intermediate hot rolling when required or may be by-passed. The work rolls for this mill will be 34-inches in diameter, the back-up rolls will be 60-inches in diameter and weigh more than 72 tons each.

The completed 6 stand hot line will be 1,200 feet long and is expected to be in operation around April 1. This will mark the culmination of the current multi-million dollar expanson program at the Alloys Plant.



Georgia Power Co. $76 Million Plant

Plans by the **Georgia Power Company** to build a $76 million steam-electric generating plant on the Chattahoochee River 12 miles north of Atlanta were announced recently. The plant will utilize the most modern methods and equipment available in the field of steam plant construction.

Two 250,000-kilowatt generating units will produce the plant's electricity. Generators of this capacity will be the most powerful ever to be used in a Georgia Power Company plant.

The board of directors voted to name the new plant after **John J. McDonough,** president of the Georgia Power Company and a veteran of 32 years' service in the electric industry. A native of Savannah, Mr. McDonough is a 1923 graduate of Georgia Tech. He was named company president in January, 1957, after serving as executive vice-president for nearly six years.

A total of $750,000 will be spent on pre-construction and construction activities at the plant this year. Subsoil investigative work has been completed, and testing is under way. Actual excavation will begin late in 1960.

The first unit will be completed in the spring of 1963, and the second in the spring of 1964. The plant is being built so that if Georgia's growing industrial and residential requirements should call for it, more units can be added.

Equipped to burn coal or gas, the plant, when operating at full capacity, will require 4,650 tons of coal a day. This is equivalent to 90 fifty-ton coal cars.

Even with the plant's extensive automation, more than 100 employees, a large number of them skilled operators, will be required for its operation. The installation will be second in generating capacity only to Plant Yates. Plant Yates, even though its individual units have a smaller capacity, has a total capacity of 550,000 kilowatts.

Although a large portion of the power generated at Plant McDonough will be delivered to the Metropolitan Atlanta and surrounding areas, it will be connected to the company's vast network of 28 generating plants and 28,303 miles of transmission and distribution line.

NACE Elects Southerners

New officers have been elected to head the **National Association of Corrosion Engineers** for the period beginning March 1960. **George E. Best,** Manufacturing Chemists' Association, **Washington, D. C.,** will be president. **Edward C. Greco,** senior research chemist of the research department, United Gas Corp., **Shreveport, La.,** is vice-president elect, and **C. G. Gribble, Jr.,** district manager for Metal Goods Corp., **Houston, Texas,** will become treasurer. **J. E. Rench,** Napko Corp., **Houston,** was elected corporate representative.

The officers will be installed on the last day of the 16th Annual NACE Conference, Dallas, March 14-18, 1960.

President-elect Best was NACE vice-president in 1959-60. He is the author of several technical papers published in CORROSION, official NACE magazine. His other NACE activities include membership on the board of directors, executive committee, member of technical program committees, symposia chairman and awards committee.

Vice - president - elect Greco was chairman of the NACE Technical Practices committee for 1957-59. He is author of three articles published in CORROSION, has held various technical committee offices and has been symposia chairman for regional and national meetings.

C. G. Gribble, Jr., newly-elected treasurer presently represents corporate members on the NACE board of directors.

(*Continued on Page* 89)

Who Discovers the Discoverers?

"A professor can never better distinguish himself in his work than by encouraging a clever pupil, for the true discoverers are among them, as comets amongst the stars." CARL LINNAEUS

Somewhere in this mighty land of ours, a gifted youth is learning to see the light of tomorrow. Somewhere, in a college classroom or laboratory, a dedicated teacher is gently leading genius toward goals of lofty attainment. Somewhere the mind of a future discoverer–in science, engineering, government, or the arts–is being trained to transcend the commonplace.

Our nation has been richly rewarded by the quality of thought nurtured in our colleges and universities. The caliber of learning generated there has been responsible in no small part for our American way of life. To our college teachers, the selfless men and women who inspire our priceless human resources, we owe more than we will ever be able to repay.

Yet how are we actually treating these dedicated people? Today low salaries are not only driving gifted teachers into other fields, but are steadily reducing the number of qualified people who choose college teaching as a career. At the same time, classrooms are beginning to get overcrowded. In the face of this, college applications are expected to double by 1967.

This is a severe threat to our system of education, to our way of life, even to our very existence as a nation. Our colleges need help–and they need it now!

HIGHER EDUCATION
KEEP IT BRIGHT

If you want to know more about what the college crisis means to you, and what you can do to help, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

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INDUSTRY SPEAKS

Prosperity? . . . . . Inflation?

Abstracted from an address by Secretary of Commerce Frederick H. Mueller, delivered at the Annual Meeting of the Charlotte Chamber of Commerce, Charlotte, North Carolina.

THE GROSS NATIONAL PRODUCT, the total value of the country's goods and services, is higher right now than before. By early Fall, it should hit the half trillion dollar all-time high altitude mark — the superabundance target of economists over the years. It can do so, and will do so, if government, business, labor and the public have the sense and the spunk to encourage sound economic growth.

The renewed upswing of business confidence throughout the length and breadth of the land — resulting from production, employment, income and sales — substantiates the optimistic announcement made by the President in his State of the Union Message, when he said, "Today our surging strength is apparent to everyone. 1960 promises to be the most prosperous year in our history."

Many hands are contributing to current prosperity — business, labor, farmers, scientists, consumers and other segments of the economy. So is government. Today, we have in the Congress a Conservative Coalition from both parties, who foster a sound economy. Today, we also have in the White House a President who presents a sound budget.

If this combined defense against reckless spending, deficit financing and inflationary schemes holds firm, then public confidence will continue to mount and the people of North Carolina and the nation can have the best year of their lives. Let me repeat — 1960 can be the best year of our lives.

Inflation

But confronting every office and home is the threat of inflation. I can think of no immediate public service more in the interest of the nation and in the self-interest of business than for businessmen to become Paul Reveres and spread the alarm of threatened inflation to every "village and farm" in America.

For months now, I have been making addresses urging businessmen to participate more actively in public affairs. I have been suggesting that they explain to their own communities the value of our private enterprise system and the hazards which it faces. I present a similar proposal to you today. For when the "grass roots" really understand and appreciate the priceless value of a healthy economy to everyone, they will support government policies and programs that protect our free system and stimulate sound growth.

Too long, too many businessmen have huffed and puffed but remained inactive when spendthrifts have tried to raid the national treasury, when left-wing smearmongers have tried to poison the public mind against business, when irresponsible politicians have tried to harass business, burden business and in some cases have succeeded in ruining certain businesses.

You'd better speak up now — while you have a public with a desire to hear you.

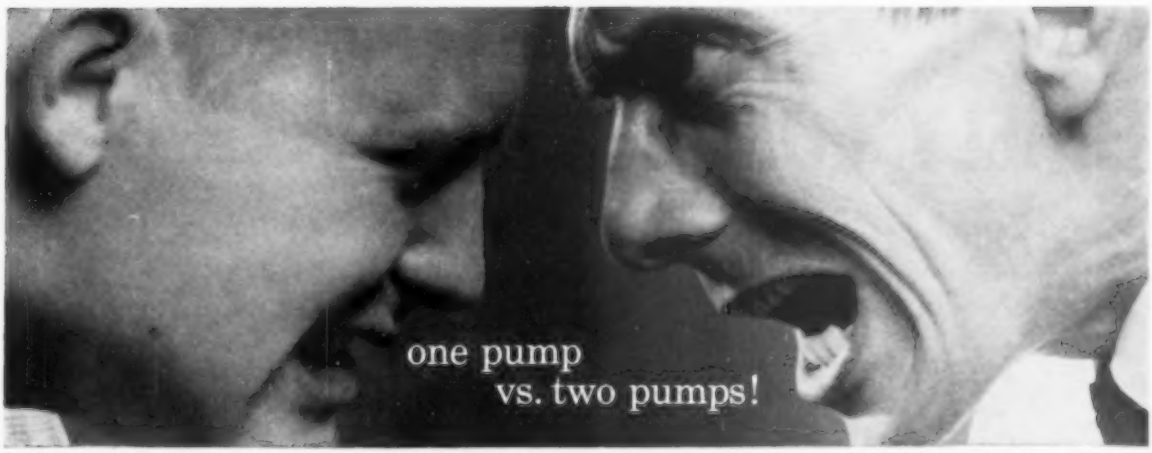
When the American people fully understand that successful business is the creator of their take-home pay, the source of most of the tax revenue that provides their government services, the keystone of the industrial production system that creates all-powerful defense and safeguards peace, then the public will support a sound economy.

Such understanding by the folks back home last year built up the overwhelming public opinion which demanded that the Conservative Coalition in Congress hold the line on the budget. The nation-wide mandate gave Congress the moral strength to fight inflation and to uphold the President's vetoes.

As you know, the President has presented his budget to the Congress. It is more than a balanced budget. It is a triple-purpose budget: a surplus-confidence-growth budget. It estimates a surplus of around $4.2 billion. This is earmarked to reduce the national debt and thereby ease some of the interest burden and not hand over the entire debt-load for our children to pay.

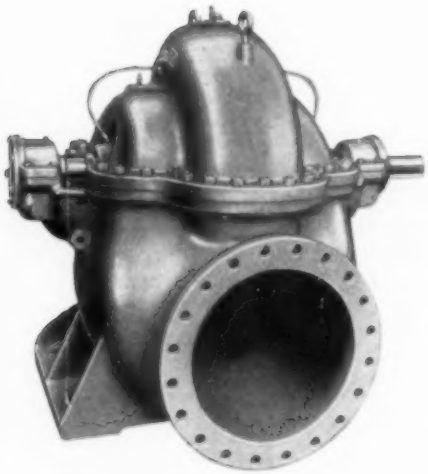
But I warn that the very presence of an expected budget surplus is an almost irresistible temptation to the spenders. They already are licking their chops at the prospect of eating up the surplus. They will want to throw away your money on unnecessary projects or, as a lure to the public, to shave certain taxes before paying off some moral obligations on the debt.

We need another great public response this year to protect the budget surplus from the greedy clutches of election year pressure groups.



Which pumping system is for you?

Phil Olmstead,
Chief Engineer, Goulds Pumps, Inc.
tells you how to find out



The mammoth pump you see here—Goulds Fig. 3420—can handle up to *40,000 gallons per minute!* Think of it—enough to fill an average-size swimming pool in less than a minute!

Yet with two or more smaller pumps in parallel—such as the Goulds Fig. 3405 centrifugals, also shown here—you could fill that swimming pool just as fast, though your strength would be divided.

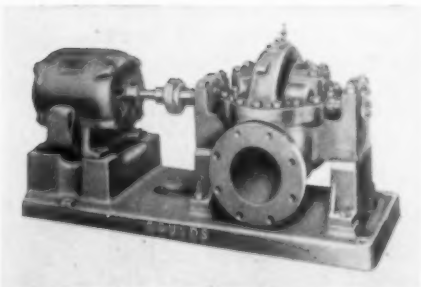
Which is the most effective way to do it?

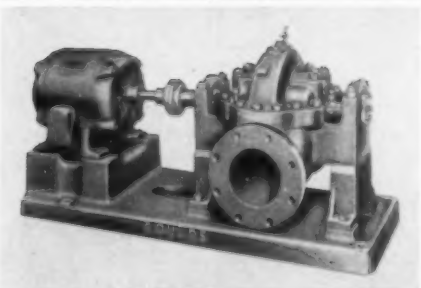
ONE PUMP?

1. With the Fig. 3420, you make just one installation, thereby save installation time.
2. Your installation takes up less space.
3. Your piping is simpler and less expensive.
4. You pay a lower initial cost: one pump, one driver, one coupling.
5. Your operating costs are lower. Big pumps have inherently higher operating efficiencies; you save on power.
6. You service just one pump; maintenance costs are lower.

TWO PUMPS?

1. During critical periods, having a *battery* of Goulds Fig. 3405 centrifugals can save the day: all "eggs" are *not* in one "basket."
2. The flexibility of two pumps lets you accommodate varying needs more efficiently.
3. Smaller pumps are easier to handle, therefore easier to install and maintain.





These points might make you wonder which system *is* right for your needs specifically. To be sure *all* important considerations are covered before you make your final decision, call in a pump specialist. Goulds application engineers help pump users make decisions like this all the time, will be glad to help you determine which system most accurately, economically and efficiently meets your needs.

I can help you get in touch with a Goulds application engineer if you write to me, Phil Olmstead, Goulds Pumps, Inc., c/o Dept. SP-30, Seneca Falls, N. Y. I'll also forward any information you might want on the pumps I've mentioned.

GOULDS GP PUMPS

For more information, use Reply Card—Page 81

TIMELY COMMENTS

Sometimes a Mistake Can Be Lived Down

BOB EMERICK'S comments about "hasty discharges" on our MANAGEMENT CLINIC page in this issue caused the editor to do a bit of thinking back over his 17 years of industrial work before coming with SPI.

THE BIG COMPANY I worked for was slow to grumble and quick to praise, and while conditions may have changed a little in recent years, that company still has a loyal organization and continues to grow and prosper.

Once a country boy with inadequate training was serving as assistant switchboard operator in the start-up tests of a new plant before it was released by the construction department and turned over to the operating department. Many new men were being trained and watched.

This boy committed the "unpardonable sin." He failed to provide proper safety clearance (as instructed) for men working on a high voltage circuit. Actually he opened a disconnect switch next to the one he was supposed to open — and reported his assignment done. An error obviously, but to those of us who lived by being careful it was not the kind of error that could be passed over lightly. Fortunately the error was caught and no one was hurt.

Then came the committee investigation and — what to do about it?

The boy really wanted to keep his job. He fully realized the enormity of his mistake and was remorseful.

Realizing that I would eventually be in charge of the plant, he got me off in a corner to make his plea. He told me that he would never make such a mistake again whereas some other "green-horn" might.

I believed him and went to bat for him with the committee. I never had cause to regret my decision. He has worked his way up in the company and now has to "stick his own neck out" by deciding who to trust with important work.

IN ALL THOSE YEARS with that good company I never saw but one man fired on-the-spot.

The superintendent must have had a bad night, but he was down at the plant bright and early while the janitor was still cleaning the tile floor in the machine room.

The corners of the room had either been missed entirely or just swiped with a dirty mop.

The superintendent got the janitor by the arm and escorted him to the door, not too gently, and told him to go to the office and get his pay — and never show his face at that plant again.

Next morning — same time, same superintendent, same janitor. "Joe, what in thunder are you doing here? I thought I fired you yesterday." "Yas sur, you did, but Ize back today."

Again persistence won out and the janitor continued on to become a valued member of the maintenance crew. In fact, he became one of the few men allowed to operate the big overhead crane when heavy machinery was being handled for inspection and maintenance. And being trusted in the crane cab on such work is a compliment to any maintenance man — black or white.

VERACITY is another employee quality that we learned never to question until all possibility of error was eliminated. Very few plant men will purposely lie, but all need to learn never to be absolutely positive in their statements unless they are sure of the facts.

Once we were faced with what appeared to be a serious misstatement. But the employee's previous record for reliability caused us to hold our suspicions in check. And sure enough, his statement was found to be absolutely honest. If we had accused this man of misrepresentation he would have lost respect for all of us — and justly so.

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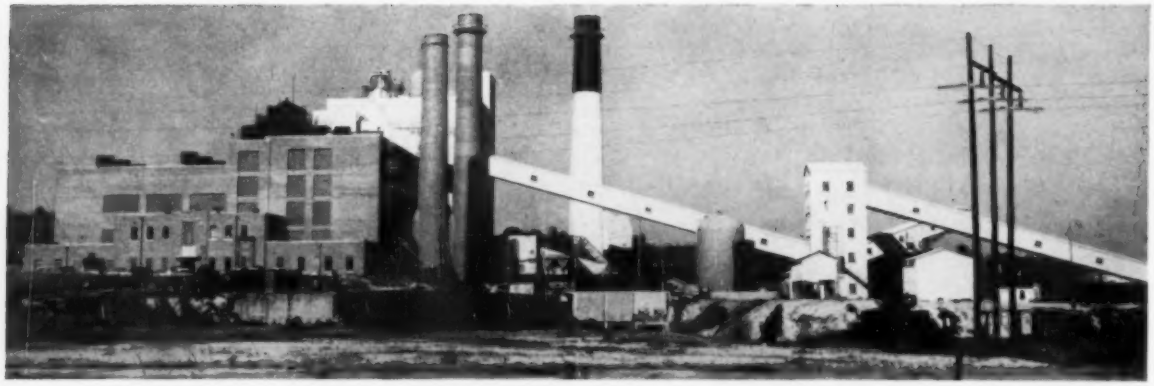


General view of plant from northeast. Tall light colored structure houses Unit No. 4.

Description of Latest Unit in Fast Growing Florida Plant

Unit No. 4—Crist Steam Plant

By GEORGE APOSTLE
Production Department
Gulf Power Company
Pensacola, Florida

CRIST STEAM PLANT named for James F. Crist, former president of the Company, is located on Governor's Bayou on the west side of the Escambia River, approximately 15 miles north of Pensacola. At present, it contains four generating units. Unit 1, 22,500 kw, was placed in operation in 1945. Units 2, 22,500 kw and 3, 30,000 kw, were placed in operation in 1949 and 1952 respectively.

Unit 4, 75,000 kw, the subject of this article, was placed in operation in July of 1959. A fifth unit, now under construction and essentially duplicating Unit 4, is scheduled for initial operation in 1961.

Turbine Generator

Electricity is generated at 13,800 volts and is stepped up to 110,000 volts for transmission over 7 feeders in Gulf Power Company's transmission system which is interconnected with the systems of Florida Power Corporation, Georgia Power Company, and Alabama Power Company. The generator is connected to the transmission system through an oil circuit breaker and disconnect switch on the high side of the transformer.

The turbine with one stage of reheat is supplied with 1800 psig, 1000 F steam at full load and exhausts into a surface condenser. Steam is extracted from the 14th, 20th, 26th, 30th, and 33rd stages for feedwater heating.

Steam passed through the high pressure section of the turbine is returned to the reheat section of the boiler, where the temperature is raised to 1000 F, after which, it is passed through the intermediate pressure section of the turbine and into the low pressure turbine and then exhausted into the condenser.

Voltage regulation for the generator is by means of a "Regulex" M-G set, and control equipment. The exciter is shaft driven through reduction gears.

Condenser

Condenser cooling water, from the Escambia River, is taken from the intake tunnel which runs underneath the base slab, by two vertical volute centrifugal circulating pumps located adjacent to each condenser. Experience shows that circulating water temperature can be expected to range between approximately 45 F and 90 F.

Because of the plant being situated near the mouth of the Escambia River which opens into a salt water bay, brackish water problems, due to tides, are encountered during a certain period of the year. In addition to a salinity averaging about 3000 ppm chlorides, marine growths have presented a seasonal problem in keeping the condensers clean. Satisfactory heat transfer of the condensers can usually be maintained, however, by tube cleaning and chlorination of the cooling water.

The cooling water is returned to the river through the discharge tunnel downstream from the intake. The installation of the fifth unit will require lengthening of the discharge canal to discharge the water further downstream, to prevent recirculation of the cooling water caused by the tides, and this work is presently in progress. Condensate is pumped from the condenser hot wells by one of two condensate pumps, and discharged through the gland steam condenser to the extraction feedwater heaters.

Boiler and Auxiliaries

The boiler and most of the auxiliary equipment are located

within the power plant building, but the induced draft fan and mechanical flue gas dust collector are located out-of-doors.

The boiler has one forced draft fan and one induced draft fan, one flue gas dust collector, two half-size air preheaters, and one continuous tube type economizer. Superheated steam flows through a 10¾ inch O.D. line to the turbine stop valves.

The boiler is designed and equipped with the necessary accessory equipment to use pulverized coal or natural gas as fuel in any proportion. A lighter oil system was provided for light-off and flame stabilization.

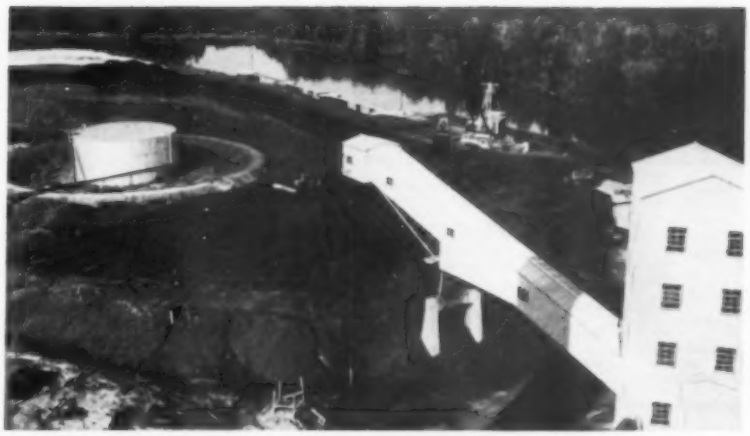
Combustion controls are of the electronic pneumatic type with the induced draft and forced draft fan speeds regulated by hydraulic couplings. Furnace pressure is maintained by regulating the speed of the induced draft fan. The air flow control may be operated automatically by either steam flow or fuel ratio. All controls may be operated manually. The boiler firing rate can be controlled automatically by either steam flow with pressure correction or by pressure alone.

The soot blowing system is automatic sequential, steam blowing, electrically operated and regulated from the control room. The system consists of 24 water wall soot blowers, 12 long retractables, 4 rotary blowers, and 2 air preheater cleaning devices.

Boiler Feedwater

Previous units at this station were furnished with evaporators for the boiler feed make-up using well water. An economic study indicated that a demineralizer should be installed with Unit 4 with sufficient capacity to furnish make-up water for the new unit, the existing three units, and future Unit 5.

The demineralizer installed is a four bed system made up of a primary cation and anion set of exchangers, and a secondary or "polishing" cation and anion set of exchangers, together with raw water filters, and degasifier, for the removal of free carbon dioxide and oxygen. The primary and secondary units are of the same size and either can be operated as a two-bed unit. Normal operation is that regeneration of the primary units is automatic, whereas, regeneration of the secondary units is by push button only.



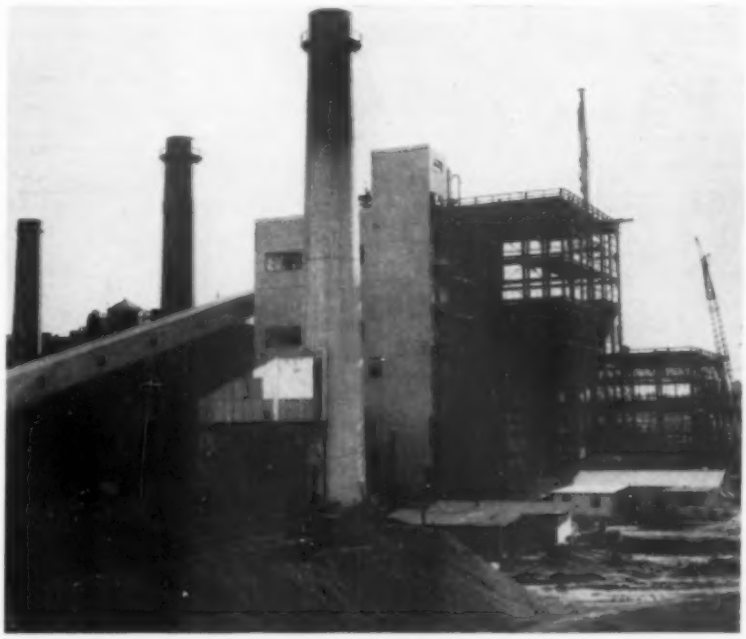
Coal stockpile area. Fuel oil storage tank, for other units, is seen at left center and stocking out conveyor in right foreground.

Each boiler is fed by two 11 stage horizontal double case centrifugal pumps. Each pump is driven by a 3600 rpm squirrel cage induction motor through a variable speed hydraulic coupling. Each pump has a capacity of 1400 gpm. One pump is normally in service, the second on stand-by. The hydraulic coupling may be controlled automatically by a three element control, or remote manually from a station in the control room.

Control Room

The control room is arranged for the ultimate centralized operation of all five units. Units 3 and 4 are presently operated from the control room, and with the installation of Unit No. 5, which is

General view of plant showing original structure, Unit No. 4 (described here), and steel construction in progress on Unit No. 5.



PRINCIPAL EQUIPMENT — Crist Steam Plant — Unit No. 4, Gulf Power Company, Pensacola, Florida

GENERAL DATA

Name of Station — Crist Steam Plant — Unit No. 4.
Station Site — Fifteen miles north of Pensacola on the west side of Escambia River.
Generating Capacity — 75,000 kw Nameplate.
Boiler Capacity — 582,000 pounds per hour.
Steam Conditions — 1800 psig, 1000 F at turbine throttle. 1000 F. reheat.
Cooling Water Source — Escambia River.
Design Engineers — Southern Services, Inc.

TURBINE GENERATOR

Turbine — Allis-Chalmers Mfg. Co. 75,000 kw, 3600 rpm reheat tandem-compound double-flow, designed for 2" mercury backpressure.
Generator — Allis-Chalmers Mfg. Co. 75,000 kw, 110,294 kva at 30 psig hydrogen, 4608 amp, 13,800 volts, 3 phase.
Exciter — Allis-Chalmers Mfg. Co. 250 volt, 200 kw, 1800 rpm, direct connected through reduction gear.
Generator Cooler — Furnished by Allis-Chalmers Mfg. Co., 90-10 cupro nickel tubes.
Turbine Oil Coolers — Two — furnished by Allis-Chalmers Mfg. Co.
Turbine Oil Filter — One — Bowser, Inc., 1080 gph.

CONDENSING EQUIPMENT

Condenser — Worthington Corp., two pass, condensing surface 60,000 sq ft, reversible flow, divided water box.
Condenser Tubes — Bridgeport Brass Co., aluminum — brass.
Circulating Pumps — Two — Worthington Corp., 27,000 gpm each. Drive — General Electric, 200 hp, 300 rpm, 2300 volt, 3 phase, squirrel cage induction motor.
Condensate Pumps — Two — Worthington Corp., 1050 gpm each. Drive — General Electric, 200 hp, 1200 rpm, 2300 volt, 3 phase, squirrel cage induction motor.
Air Removal Equipment — Worthington Corp., mechanical pump.
Expansion Joints — Garlock Packing Company — Circulating water rubber expansion joints. Badger Mfg. Co. — Condensate pump suction expansion joints.

SWITCHBOARD EQUIPMENT

Switchboard and Panels — Assembled and wired by Clement Electric Company; field erection by R. H. Bouligny, Inc. Voltmeters, ammeters, wattmeters, synchroscope and other miscellaneous instruments by Weston Instruments Division of Daystrom Inc. Watthour, printing demand meters, relays, control voltmeter, transfer, and synchronizing switches by General Electric Co. Annunciators by Autocall Co. Recording voltmeter by Bristol Co. Recording megavar, megawatt meters, and operation recorder by Esterline Angus Co. Transformers by Standard Transformer Co.

STEAM GENERATING EQUIPMENT

Boiler — Combustion Engineering, Inc., single drum radiant type with water wall furnace. Heating surface of 14,030 sq ft capacity 582,000 lb hr, operating pressure 1,875 psig, 1000 F.
Reheater — Combustion Engineering, capacity 506,-815 lb hr of reheat steam from 694 F to 1000 F at 494 psig.
Economizers — Combustion Engineering, continuous finned type, 12,000 sq ft approximate heating surface, 2,210 psi design pressure.
Air Heaters — Two — Air Preheater Corporation, Ljungstrom regenerative, 100,300 sq ft heating surface each.
Soot Blowers — Copes-Vulcan Division, Blaw-Knox Co. Steam blowing, automatic sequential electrically operated and controlled.
Blow-off Valves — Yarnall-Waring Company.
Water Columns — Diamond Power Specialty Corporation. Diamond Bi-color gauge. Reliance and Yarway remote level indicators.
Safety Valves — Foster Engineering Company.
Chemical Feed Pump — Two — Milton Roy Company. Sulphite pump, adjustable capacity 0-12.8 gpm. Caustic phosphate pump, adjustable capacity 0-40 gpm.
Coal Burners — Sixteen — Combustion Engineering, tilting tangential type.
Gas Burners — Twenty-four — Combustion Engineering.
Superheater Controls — Leeds & Northrup Company.
Reheater Controls — Leeds & Northrup Company.
Combustion Controls — Republic Flow Meters Co., pneumatic electronic type.

COAL HANDLING EQUIPMENT

Barge Unloader — Clyde Iron Works, Inc., one — electric Whirley crane, 550 tons per hr. Two — fixed drum haulage winches.
Coal Conveyors — Continental Conveyor and Equipment Co. Five 30" belts, capacity 375 tons per hour.
Automatic Scales — Four — Stock Equipment Company, 25 tons per hour each, 500 lb unit capacity weigh hopper.
Tractors — Two — Caterpillar Tractor Co., diesel type.
Vibrators — Four — Syntron Company.
Coal Samplers — One — Galigher Co., 36" chain driven, automatic.
Pulverizers — Four — Combustion Engineering, bowl type, capacity 10 tons per hour each.
Feeders — Four — Combustion Engineering.

DRAFT EQUIPMENT

Forced Draft Fan — One — Sturtevant Div., Westinghouse Electric Corp., 205,000 cfm at 100 F, 10.8" water pressure. Speed controlled through American Blower Corp., fluid drive. Drive — General Electric Co. 450 hp squirrel cage motor.
Induced Draft Fan — One — Sturtevant Div., Westinghouse Electric Corp., 330,000 cfm at 244 F at 19" water pressure. Speed controlled through American Blower Corp., fluid drive. Drive — General Electric Co. 1500 hp squirrel cage motor.
Chimney — One — Rust Engineering Co., 184 ft high with 13'8" top inside diameter reinforced concrete.
Breeching and Ducts — Birmingham Fabricating Company.
Draft Gauges — Bailey Meter Company.

BOILER FEEDWATER EQUIPMENT

Boiler Feed Pumps — Two — Byron Jackson Pumps, Inc., horizontal, double case, centrifugal, 1400 gpm capacity at 3470 rpm with 5,575 ft head. Drive — General Electric, 2250 hp squirrel cage motor. Speed controlled through American Blower Corp., fluid drive connected by Fast's couplings to pump and motor.
Extraction Heaters — Four — Lummus Company: One — horizontal 14th stage, 3 pass U-type, 2,550 sq ft. One — horizontal, 20th stage, 3 pass U-type, 2,230 sq ft. One — horizontal, 30th stage, 2 pass U-type, 1,700 sq ft. One — horizontal, 33rd stage, 2 pass U-type, 2,425 sq ft.
Deaerating Heater — One — Elliott Company, 580,000 lb hr, guaranteed oxygen removal to .005 CC/L.
Feedwater Regulators — Republic Flow Meters Co., hydraulic coupling control.
Chlorinator — Fisher and Porter Company.
Demineralizer — Permutit Company, 100 gpm design flow capacity, 4 bed.

ASH HANDLING EQUIPMENT

Ash Hopper — United Conveyor Corporation.
Sluicing Equipment — United Conveyor Corporation.
Fly Ash Removal — United Conveyor Corporation, Hydroveyor system.
Fly Ash Collectors — Buell Engineering Company, mechanical velocity type.

PIPE AND INSULATION

Piping Contractor — Blaw-Knox Company.
Check Valves — Chapman Valve Mfg. Company.
Gate & Globe Valves — Chapman; Fisher; Hancock; Stockham.
Pressure Reducing Valves — Fisher; Annin; Rockwell.
Small Valves — Chapman, Hancock; Stockham.
Reverse Flow Valves — Pratt.
Relief Valves — Crane Co., Consolidated.
Traps — Armstrong Machine Works; Sarco Co.; Yarnall-Waring Co.
Expansion Joints — Badger Mfg. Co., stainless steel.
Insulation Contractor — Insulation Services, Inc.
Insulation Material — Unibestos, aluminum jacketed .020" thickness.

INSTRUMENTS

Load Control and Telemetering — Leeds and Northrup Company.
Television for Furnace — Dage Television Division, Thompson Products, Inc.
Steam Flow Meters — Two — Republic Flow Meters Co., main steam and reheat steam meters.
Feedwater Flow Meters — One — Republic Flow Meters Co.
Condensate Flow Meters — One — Republic Flow Meters Co.
Spray Water Flow Meters — Two — Republic Flow Meters Co.
Fuel Gas Flow Meter — One — Republic Flow Meters Co.
Pressure Gauges — Ashcroft; Bailey; indicators and recorders.
Vacuum Gauges — American.
Mercury Columns — American.
Thermometers — American.
O2 Analyzer and Recorder — Hays Corp.
Barometers — American.
Temp. and Cond. Recorders — Minneapolis-Honeywell.

ELECTRICAL EQUIPMENT

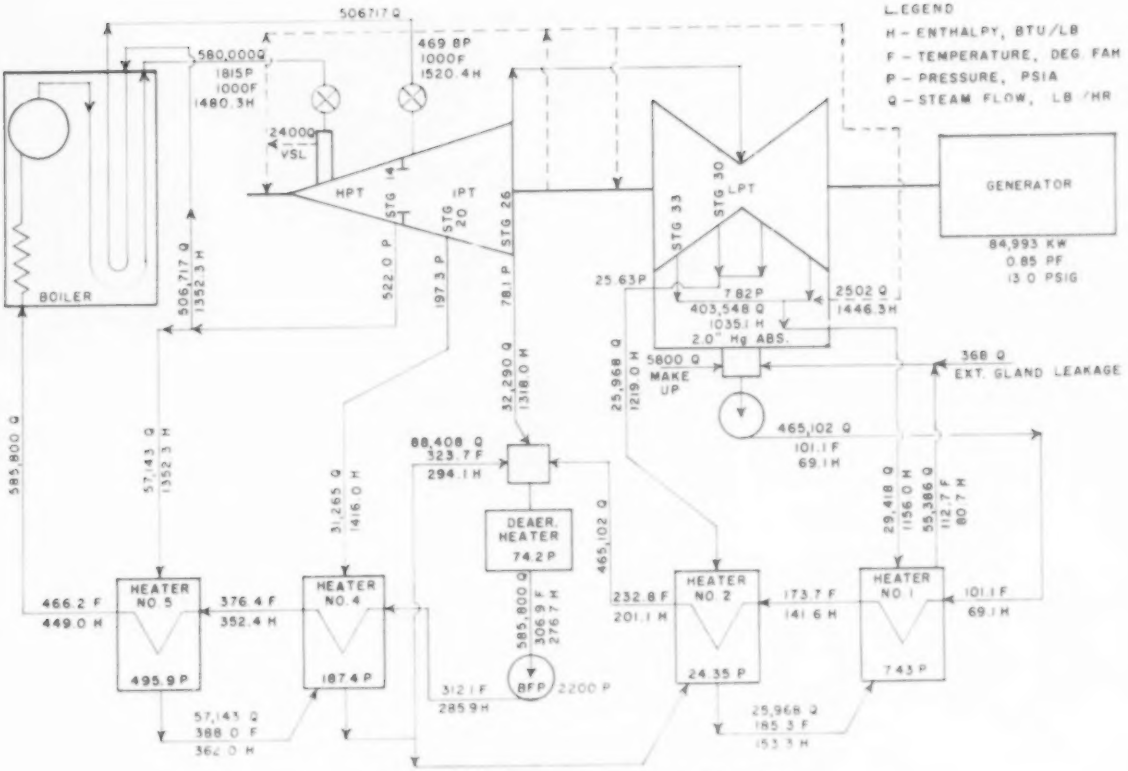
Switchyard Structures — Erected by R. H. Bouligny, Inc.
Main Transformer — One — Westinghouse Electric Corp., 105,000 kva, three phase, 13,200 to 115,000 volts.
Auxiliary Transformers — Westinghouse Electric Corp., one — 3 phase, 13,800 to 2400 volt; one — 3 phase, 12,000 to 2400 volt; two — 3 phase, 2400 to 600 volt.
Oil Circuit Breakers — Westinghouse Electric Corp., 2 — 1200 ampere, 115 kv, outdoor oil circuit breakers.
Disconnect Switches — Johnson Mfg. Co.
Switchgear — Westinghouse Electric Corp.; Allis-Chalmers Mfg. Co.; I-T-E Circuit Breaker Company.
Fire Protection — CO2 Fire Equipment Company.
Storage Battery — Electric Storage Battery Company, Exide — Manchex type.
Battery Charger — Electric Products Company, 140/129 volts, 5 kw.

MISCELLANEOUS

Pumps — Allis-Chalmers Mfg. Co.: Two — general service, 2300 gpm each; two — ash sluice, 1800 gpm each. Nagle Pumps, Inc.: two — sump, 1600 gpm total capacity, one — reclaim hopper sump, 500 gpm. Layne Central Company, one — deep well, 500 gpm.
Air Compressors — Two — Chicago Pneumatic Tool Company, 305 cfm.
Motor Drive Couplings — Fast's; Koppers Company, Inc.
Traveling Intake Screens — Two — Link-Belt Company, 70,000 gpm each.
Vacuum Cleaning Eqpt. — U. S. Hoffman Machinery Co.
Tanks — R. D. Cole Mfg. Co., one — house service water, 50,000 gallon; one — condensate storage, 150,000 gallon; one — clear water storage, 8,000 gallon; two — turbine oil storage, 5,300 gallons each.
Elevator — Otis Elevator Company, traction type, 3,000 lb capacity, 100 fpm.

CONTRACTORS

General Contractor — Gulf Power Company.
Clearing and Grading — Standard Construction Co., Inc.
Excavation and Concrete — Kenneth Fulghum, Contractors.
Structural Steel — Ingalls Steel Construction Co.
Siding and Roofing — Asbestos Engineering, Inc.
Piping — Blaw-Knox Company.
Insulation — Insulation Services, Inc.
Electrical — R. H. Bouligny, Inc.



Flow diagram — Crist Steam Plant, Unit No. 4.

currently under construction, the controls of Units 1 and 2 will be brought into the centralized control room.

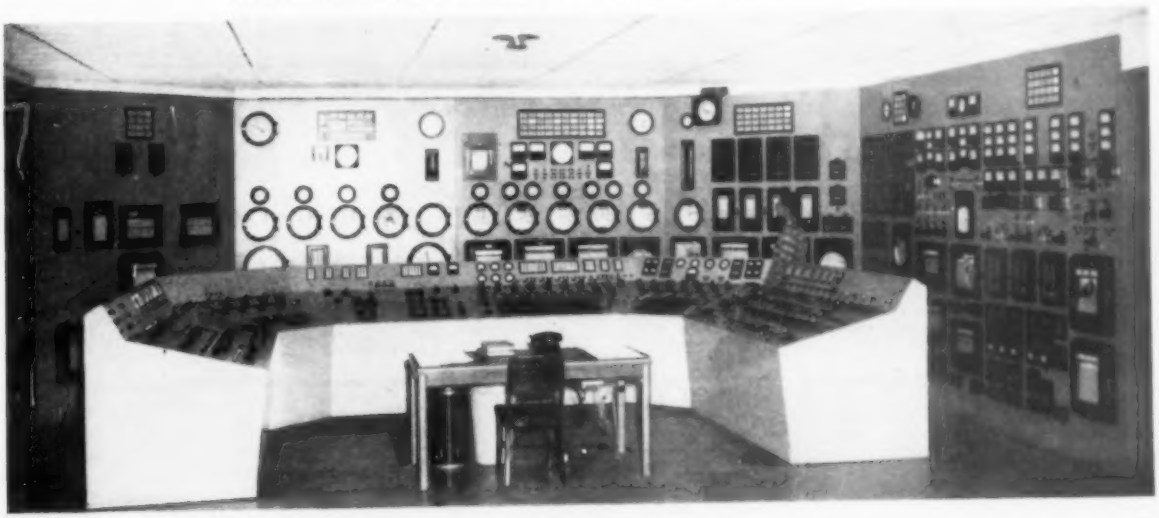
Controls and switches are located on U-shaped benchboards. Recording and indicating instruments are located on vertical panels behind the benchboards with the exception of some miniature indicators on the short vertical back of the benchboard.

Coal and Ash Handling

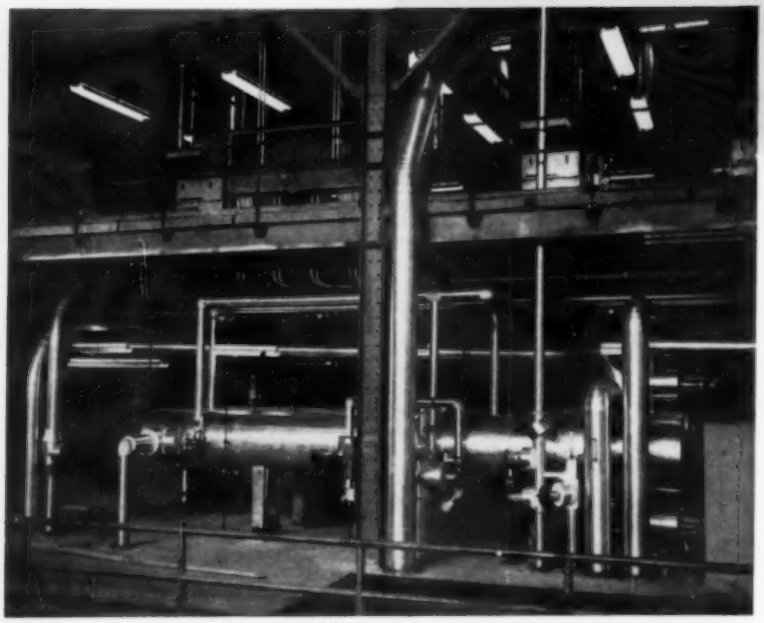
Coal is delivered by barges and unloaded by means of a Whirley unloading crane which has a capacity rate of 550 tons per hour. The coal is unloaded either directly into a hopper or on the pile nearby. The hopper is provided with a reciprocating type feeder loading directly on conveyor No. 1, which discharges to conveyor No. 2, and thence, to the crusher building.

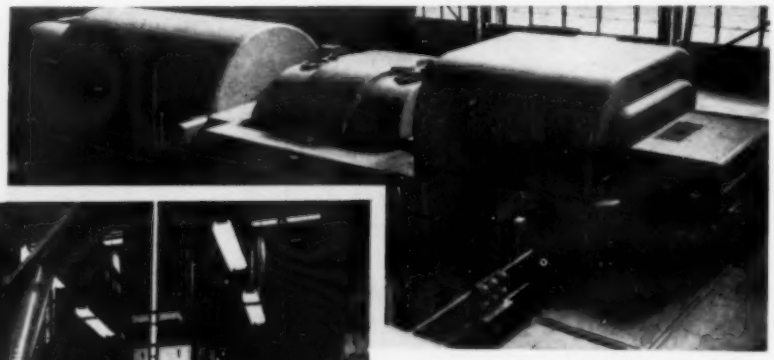
A self cleaning type magnetic separator at the head of conveyor No. 2 removes the tramp iron from the coal. The coal may be diverted

Centralized control room showing controls for Units 3 and 4.



Below — View of heater floor shows portions of aluminum jacketed feedwater heaters and inter-connecting lines.





Above — Turbine - generator nameplate rated at 75,000 kw.

to the storage area via conveyor No. 3 or conveyed directly via conveyor No. 4 to the boiler house where tripper type conveyor No. 5 distributes the coal into the bunker. It is taken from the bunker in a crushed condition through automatic coal scales to the feeders and then to bowl mill pulverizers.

Proper quantities of coal are maintained in the pulverizers through the operation of variable speed rotating feeders. Feeder speed and hence coal feed is regulated by a speed regulating lever operated by a positioner.

Coal on the pile is packed and moved by two Caterpillar tractors (type D-7 and D-9), and a packing roller. It is returned to the conveyor via a reclaim hopper.

Automatic Removal

The fly ash, bottom ash, and pyrites removal units constitute a completely automatic sequential system. Separate switches are provided so that each system can be operated separately on either automatic or manual control. Disposal is made by sluicing through a common discharge line to the ash pond fill area.

Fire Protection

Fixed fog nozzle systems are located in areas where oil fires might occur, at main transformers and also at transfer points on the coal handling system. In addition, hose outlets are located throughout the plant and at some outside locations for use of portable fog nozzles.

High pressure water may be supplied to any of these nozzles and outlets by means of either an electric fire pump, which can be started remotely from push button stations or a gasoline engine driven fire pump, both of which are located outside of the plant building.

Fixed CO_2 systems are installed at strategic locations for protection of switchgear and other electrical equipment. Portable extinguishers consisting of both CO_2 and CBM types are located through the plant.

Building and Facilities

The main building, housing the turbine and boiler, is of steel and has gray transite siding. Office space for the plant superintendent, supervisors and office personnel is located in a brick masonry office annex in front of the building which overlooks Governor's Bayou. Also located in the annex, are a well equipped laboratory, machine shop, storage space, assembly room, and modern locker shower rooms.

There is no division wall between turbine room and boiler room. The deaerator, house service water tank, clear water tank and elevator penthouse are located on the roof of the building.

Atomic Power Plant Progresses — S. C.

Work on the South's first atomic power plant is proceeding on schedule, the directors of Carolinas Virginia Nuclear Power Associates, Inc., were told at a recent meeting.

Harry Ferguson, general manager of the Parr Shoals project reported that tests preliminary to actual construction are being made at the site. A report from E. C. Fiss, CVNPA engineering director was also made.

The four privately owned member companies of CVNPA are committed to spend approximately $28,000,000 on the project.

The member companies are: Virginia Electric and Power Company; Carolina Power and Light Company; Duke Power Company and South Carolina Electric and Gas Company.

COLLECTORS

CLEANERS

FILTERS

STRAINERS

AIR & GAS CLEANING

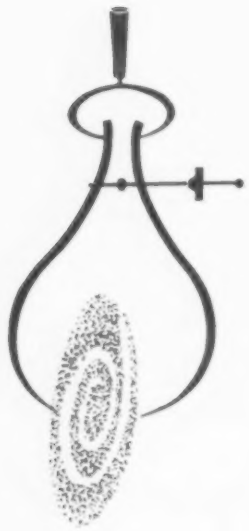
FANS & BLOWERS

MATERIALS & SUPPLIES

CONTROLS

RECOVERY SYSTEMS

·····Air and Gas



Reference Guide and Buyer's Directory for the South-Southwest

601—Vacuum Cleaning Pays—Booklets P8 and AB-100 show how eight heavy duty units (1½ to 15 hp) for cleaning hard-to-get-at areas, reclaiming valuable materials, etc., save money, cut costs, and increase plant efficiency. — U. S. HOFFMAN MACHINERY CORPORATION.

602—Tubular Dust Collectors — Sheet 2-PDC-1 shows two series of tubular dust collectors, one to meet ordinary requirements, the second to meet high efficiency requirements in the field of air pollution control. — AEROTEC INDUSTRIES, INC.

603—Ash Handling, Small Plants — Booklet 194P describes the Econo-Ash system of ash handling, a low initial cost, low upkeep system which results in cleaner operation and better efficiency in the small coal-burning plant. — THE ALLEN-SHERMAN-HOFF CO.

607—Regenerative Fly Ash Collector — Six-page folder describes a new design of collector to remove fly ash, soot, and cinders from flue gas by centrifugal separation, with high efficiency, low draft loss, and satisfactory operation under all conditions of load. — BRESLOVE SEPARATOR COMPANY.

604—Unit Air Filters — Bulletin 207 illustrates and explains the construction and advantages of the new Type HV-2 high capacity, low resistance unit filter — the Type MW heavy duty metal filter, the Type AL-2 aluminum filter, and various special filters for special purposes. — AMERICAN AIR FILTER COMPANY, INC.

610—Absolute Filter — Bulletin 106C describes the Cambridge Absolute filter, which claims highest efficiency in the removal of particles of all size, without the use of power, water flushing, or other auxiliary aid. — CAMBRIDGE FILTER CORPORATION.

611—Air-Steam-Vapor-Gas Purifiers — Bulletin G-51-1 describes Centrifix purifiers, free of moving parts to wear or break, to eliminate entrainment of impurities in gas, air, steam or vapor, in various types adapted to various applications. — CENTRIFIX CORPORATION.

612—Exhausting Corrosive Fumes — Bulletin 702-A shows how corrosive fumes can be exhausted by the use of rubber, lead lined, or specially coated fans. — CLARAGE FAN CO.

613—Automatic Air Filter—Bulletin 210 describes an automatic self-cleaning air filter which operates with high overall economy and efficiency, low resistance to air flow, and which can be installed readily in a wide variety of applications. — CONTINENTAL AIR FILTERS, INC.

614—Air Purification Equipment — Bulletin 108-A, 12 pages, describes and illustrates Dorex activated carbon air purification equipment, with complete data on selection, installation, and application — to purge odorous, gaseous, vaporous impurities, purifying air and protecting products and equipment. — CONNOR ENGINEERING CORP.

615—Centrifugal Dust Separators — Bulletin E-596, 12 pages, describes the outstanding advantages of Day centrifugal dust collectors, featuring rugged construction and long life, a wide range of sizes and applications, low cost and high efficiency, with various accessories and combinations. — THE DAY COMPANY.

616—Dust Collectors and Air Cleaners — Bulletin 1301, 12 pages, describes Uni-Wash collectors of dust and other contaminants and for the collection of waste or valuable suspended material, available in all sizes and types to meet specific collection requirements in assembled and in completely self-contained units. — DeVILBISS METAL FABRICATORS COMPANY, Division of The DeVilbiss Company.

608—Dust Collection — Eight-page bulletin describes a dust collection system for collecting up to 5 lb of dust per hour. It includes first and second stage collectors, 48 cyclones and two twin-section electric precipitators. — BUELL ENGINEERING CO., INC.

617—Air Moving & Cleaning — Bulletin DB 45 describes De Bothezat air moving and air cleaning equipment for industrial, commercial, and institutional application, with case studies and complete engineering details. — De BOTHEZAT FANS DIV.

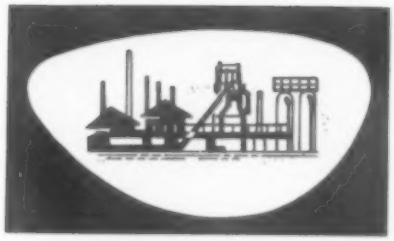
618—Electronic Air Cleaner — Bulletin 405 describes the Staynew high velocity electronic air cleaner designed to eliminate smoke, air-

Cleaning

CATALOGS AND BULLETINS . . . .

Reference literature available from manufacturers to help solve air cleaning problems and apply materials and equipment.

Use Reader Service Card on Page 81



borne dust, and pollen from ventilating and other air and gas systems. Unit construction, lightweight, wide variety of sizes and models feature this unit by Dollinger. — DOLLINGER CORPORATION.

619—Glass-Bag Filter — Bulletin 802, 28 pages, describes the complete line of Dracco dry collection equipment, featuring the glass bag filter for meeting the strictest anti-pollution ordinances with certainty, with efficiency, and with convenience of application. — DRACCO DIVISION OF FULLER COMPANY.

620—Dust Control — Bulletin A-9159 describes Ducon cyclones, wash collectors, filters, and dust valves for the control of dust and the purification of air and gases. — THE DUCON COMPANY, INC.

622—Electronic Air Cleaners—Bulletin HC-50-C—Describes Electro-Air electronic air cleaners using detergent-adhesive process to give high efficiency, high velocity, low space, in a custom line and a built up line of units for all industrial and commercial applications. — ELECTRO-AIR CLEANER COMPANY, INC.

623—Self Washing Filter — Bulletin B-1000-3 — Describes the Far-Air Self-Washing Filter which automatically washes and automatically self-oils in a cycle determined by the needs of the application to give wide application and capacity and constant high efficiency and safety. — FARR COMPANY.

624—Mechanical Gas Centrifuge — Bulletin CTF-11 — Describes the Type CTF Whirlex mechanical gas centrifuge featuring superior efficiency in the removal of solids from industrial and furnace gases — competing with electrostatic precipitators, cloth and fiber filters, liquid scrubbers and cyclone collectors, with competitive advantage in many cases. — THE FLY ASH ARRESTOR CORP.

627—Mechanical Dust Collector — Bulletin 171 — Describes the Aerodyne Dust Collector which combines high efficiency collection with very low draft loss and extreme flexibility of installation. — GREEN FUEL ECONOMIZER COMPANY, INC.

628—Industrial Vacuum Cleaners — Catalog — Describes Invincible portable vacuum cleaners in sizes for industrial and large commercial use, to rid plants of dust and dirt hazards, where rugged versatile high powered machines are needed to control dust and grime.—INVINCIBLE VACUUM CLEANER MFG. CO.

630—Dust and Fume Control Systems — Bulletin PE-1 — Describes the design and application of systems fabricated and installed by K & B to provide dust and fume control systems for all types of industry, including particularly the ceramic, the metals, the food and grain, the wood products, wherever dust and fumes and impurities must be controlled. — THE KIRK & BLUM COMPANY.

632—Dust Separators for Air Pumps & Compressors — Bulletin A-1409 — Describes a simple, easily maintained, adequate, and dependable dust separator intended to protect air handling and vacuum units. — THE KRAISSL COMPANY.

633—Cleaning and Filtering Equipment — Catalog A-660 — Describes various equipment and various methods of cleaning and of filtering the air supply and systems concerned therewith, as used in industrial processes. — THE R. C. MAHON COMPANY.

635—Space Filters — Bulletin 1505 — Describes the Dustfoe space filter for fail-proof, dry, high efficiency air filtration, readily adapted to a wide variety of applications in chemical plants, paper mills, steel mills, food plants and all sorts of industrial and commercial applications. — MINE SAFETY APPLIANCES COMPANY.

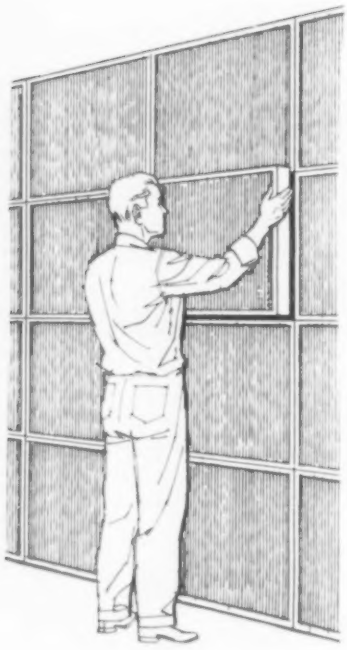
636—Air Filtering Products — Folder No. 1-AR-337 — Describes the nature, the performance and the applications of various air filtering products for commercial and industrial use in various types, shapes and sizes. — OWENS-CORNING FIBERGLAS CORPORATION.

637—Dust Control for Industriy — Bulletin 922, 16 pages, gives the reasons, the standards, the general methods of industrial dust control, and the various types of self-cleaning collectors, cloth screen collectors, bag collectors, centrifugal collectors, wet collectors and accessory equipment. — PANGBORN CORPORATION.

634—Pulverizing and Cleaning — Bulletin 571-1 describes the use of Mikro products — pulverizers, atomizers, collectors and conveyors in the pulverizing, air conveying and dust collecting involved in various processes, with description of service facilities and various applications. — METALS DISINTEGRATING COMPANY, INC., PULVERIZING MACHINERY DIVISION.

639—Granular Processing Equipment — 12-page booklet describes continuous granular processing equipment and the collectors and air handling equipment to take care of dust and contamination. — EDW. RENNEBURG & SONS CO.

641—Tubular Type Dust Filters — Bulletin 24-D describes a pioneer in dust filters — the Ruemelin tubular cloth type filter, featuring low maintenance, adequate performance, complete reliability — available in a wide variety of types and sizes. — RUEMELIN MFG. CO.



642—Effective Dust Control — Bulletin 104 shows the economics and savings of effective dust control through the salvage of valuable materials, the maintenance of clean and dust-free plants, the elimination of wear, the reduction of heat losses and the elimination of nuisances — and describes Dynaclone dust filters, shaker-type filters, and the engineering and application of various types. — THE W. W. SLY MFG. CO.

643—Industrial Vacuum Cleaners — Bulletin 155-B illustrates and describes portable and stationary industrial vacuum cleaning equipment designed for heavy duty and high vacuum — available from 1½ to 100 hp. — THE SPENCER TURBINE CO.

644—Dust Collectors and Separators — Form 359, 6 pages, describes Torit self-contained cabinet cloth-filter type dust collectors in compact models ranging from 160 to 2,000 cfm, and high efficiency centrifugal cyclone separators, in models ranging from 250 to 6500 cfm. — TORIT MANUFACTURING CO.

645—Electronic Air Cleaners — Bulletin E-77 describes a pioneer type of electronic air cleaner operating in a manner similar to a magnet and handling a wide variety of particles, with particular use in applications where high efficiency of cleaning is involved. — TRION, INC.

646—Cottrell Electric Precipitators — Treatise C-103-R is a complete booklet describing electrical precipitators in theory, in operation, in practice — a comprehensive educational presentation. — WESTERN PRECIPITATION, Division of Joy Manufacturing Co.

647—High Temperature Dust Collectors — Bulletin F-105R — The savings in plant and operating costs possible through the use of Therm-O-Flex high temperature dust collectors handling gases up to 550 F, eliminating destructive shaking, and increasing plant economies, with particular application in ceramic plants, sintering operations, chemical processes, and the like. — WESTERN PRECIPITATION, Division of Joy Manufacturing Co.

648—Dust and Fume Control — Bulletin IRXC elaborates on eight reasons why Wheelabrator Dustube collectors have had particular acceptance by a wide variety of distinguished clients — reasons such as maximum cloth life, simple installation, simplified maintenance. — WHEELABRATOR CORPORATION.

649—Entrainment Separators — Bulletin 810-A describes a line of new low cost centrifugal type entrainment separators for the removal of moisture and solids from air, gas and steam, with high efficiency, low pressure drop and compact lightweight installation. — WRIGHT AUSTIN COMPANY.

650—Dust and Fume Control — 16 page booklet gives illustrations and data on the application of tailored dust control systems, fume control systems, air conveying systems and heat control systems — and the design, fabrication and installation of custom-built equipment in such systems to meet the individual requirements of various types of large and small plants. — YOUNG & BERTKE COMPANY.

651—Electrical Precipitation — Data Booklet 2-ATC-2 describes the design, construction, operation and application of Aerotec electrical precipitators, with case studies of a number of applications.—AEROTEC INDUSTRIES, INC.

652—Pneumatic Lift for Air Cleaner — Bulletin 160 describes the operation of the new Cycoil oil bath air cleaner which features a pneumatic oil lift, with no moving parts, giving the advantages of an automatic self-cleaning air cleaner with extremely high efficiency and low maintenance requirements, with reduced installation and maintenance costs. — AMERICAN AIR FILTER COMPANY, INC.

653—Dust Control Fan Units — Catalog 517 gives distinguishing advantages of Clarage V-belt driven ready units in the application of fans to air moving application, with provision for application of dust and solid collectors. — THE FLY ASH ARRESTOR CORP.

654—Electric Precipitators — Bulletin 104, 28 pages, shows how Buell units meet five engineering requirements — positive control of gas flow; high uniform electrode emission; effective continuous cycle rapping; and safe trouble-free, high voltage accessories. Gives 9 time-tested steps to a successful installation. — BUELL ENGINEERING CO. INC.

655—Package Collectors — Bulletin SC-21 describes the "Whirlex" Package Cyclone Dust Collector applicable to the solution of a wide variety of air pollution problems, recovering dust, mist and other impurities from grinding machines, woodworking machines, kilns, crushers, elevators, dischargers, furnaces, grain units and the like. — THE FLY ASH ARRESTOR CORPORATION.

656—Space Filters — Bulletin 1505-5 describes M-S-A Ultra-Aire space filters, with replaceable elements without separators, for high humidity and temperature service, featuring high dust carrying capacity and efficiency — strong, light, versatile and economical. — MINE SAFETY APPLIANCES COMPANY.

657—Cloth Screen Collectors — Bulletin 923 describes Type "CH-3" Self Cleaning Cloth Screen Dust Collectors for continuous, efficient control of industrial dust, featuring minimum of area, partitions, traveling manifold and application in the conversion of existing collectors. — PANGBORN CORPORATION.

658—Ash Handling — Pneumatic ash conveyors described in Bulletin S57-A. Ash removal at lower cost and high operating efficiency. — NATIONAL CONVEYORS COMPANY, INC.

659—Dust & Fly Ash Collectors — Bulletins describe Series 342 ("cyclone" principle, with individual tubes which permit flexibility in design to fit plant layout) and Series 361 (primary and secondary systems for high efficiency fly ash recovery). —AMERICAN-STANDARD INDUSTRIAL DIV.

Buyer's Directory

This tabulation lists many of the important air and gas cleaning equipment manufacturers and their representatives in the South and Southwest. Some manufacturers, however, failed to furnish information requested.

AEROTEC INDUSTRIES, INC., Pratt-Daniel Plant, So. Norwalk, Conn.

District of Columbia, Washington 6: T. W. McGuire Co., 1627 K St., N. W. Phone STerling 3-6080

Florida, Miami: M. J. Colitz, 515 N. E. 82nd St. Phone PLaza 4-4273

Georgia, Decatur: A. J. Kroog Co., 235 E. Ponce de Leon Ave. Phone DRake 7-6711

Kansas, Mission: The Hesler Co., Inc., 203 Muntzel-Keach Bldg. Phone RAndolph 2-6464

Louisiana, New Orleans 22: Arthur C. Hayes & Assoc., 2217 Pelopidas St. Phone EVergreen 1486

Missouri, St. Louis 8: Economy Equipment Co., 4526 Olive St. Phone FOrest 7-5328-29-30-31

North Carolina, Charlotte 3: T. C. Heyward & Co., 518 E. Morehead St. Phone FRanklin 7-2678

Ohio, Cincinnati 2: Ellman Equipment Co., 1028 Fed. Reserve Bank Bldg. Phone MAin 1-3971

Oklahoma, Tulsa 5: Vanco Engineering Co., 4407 So. Peoria. Phone RIverside 7-0425

Tennessee, Chattanooga 2: Edgar A. Rogers, Chattanooga Bank Bldg. Phone AMherst 7-4640/7-4365

Texas, El Paso: Landes Zachary & Peterson Co., 2137 Mills St. Phone KEystone 3-9060

Texas, Houston 5: C. C. Pryor Co., 2435 North Blvd. Phone JAckson 2-7515

Virginia, Richmond 1: Frank Howell Co., 17 East Cary St. Phone MIlton 3-8427

AIR-MAZE CORP., 25,000 Miles Road, Cleveland 28, Ohio

Alabama, Birmingham 3: Associated Engineers, 3716 3rd Ave. South. Phone 54-7659

District of Columbia, Washington 7: Allen, Mitchell & Co., 1053 31st St., N.W. Phone FEderal 3-1818

Florida, Jacksonville 3: H. L. McMurry & Co., P. O. Box 2548, 614 Fields St. Phone ELgin 6-1371

Florida, Miami 33: George Brophy Co., P. O. Box 33-291, Coconut Grove Station. Phone HIghland 4-6253

Georgia, Atlanta 3: Felix J. Commagere, 157 Simpson St., N.W. Phone JAckson 5-2761

Kentucky, Louisville 2: Richard Equipment Co., 633 S. 5th St. Phone JUniper 3-4646

Louisiana, New Orleans 12: C. R. Clingman, 306 Pere Marquette. Phone MA 6316

Louisiana, Shreveport: J. W. Cherry Co., P. O. Box 4098, 151 Olive St. Phone 5-8738

Maryland, Baltimore 18: Taze & Hewitt, 33 E. 21st St. Phone BElmont 5-5895

Missouri, Kansas City 8: Manufacturers' Sales Co., 1733 Locust St. Phone GR 1-1224

Missouri, St. Louis 30: C. W. Baker, 6953 Olive St. Road. Phone PArkview 5-2880

North Carolina, Charlotte 4: Howard V. Caton Co., 230 N. Torrence St. Phone FRanklin 5-2028

Ohio, Cincinnati 2: Richard Equipment Co., 2137 Reading Road. Phone CH 1-3240

Oklahoma, Tulsa 14: D. B. Hutchcraft Co., 2821 S. Florence Ave. Phone RIverside 2-1261

Tennessee, Memphis 12: J. E. Hurston, 2470 Poplar Ave. Phone GLendale 8-4461

Tennessee, Nashville: J. E. Hurston, 306 Exchange Bldg. Phone CHapel 2-0812

Texas, Corpus Christi: L. S. Pawkett & Co., P. O. Box 3476, Kleberg Station. Phone TUlip 4-3166

Texas, Dallas: Welco Sales, Inc., P. O. Box 35226, Airlawn Station. Phone LAkeside 6-8651

Texas, El Paso: Herlin Engineering Co., P. O. Box 512, 600 W. Paisano Drive.

Texas, Ft. Worth: Welco Sales, Inc., 1109 Currie St. Phone EDison 2-7116

Texas, Houston 19: The Eads Company, P. O. Box 13071. Phone JAckson 6-1646

Texas, Houston: Ramsey & Robinson, P. O. Box 7585, 1109 Rosine. Phone JAckson 3-7970

Texas, Lubbock: Welco Sales, Inc., 3140 34th St. Phone SHerwood 4-7358

Texas, San Antonio 12: L. S. Pawkett & Co., P. O. Box 8057, Laurel Heights Station. Phone CApitol 6-1291

Virginia, Norfolk 10: Laurence Trant & Co., 111 W. Main St. Phone MAdison 2-6914

Virginia, Richmond 19: Laurence Trant & Co., 601 E. Franklin St. Phone 7-4591

West Virginia, Charleston: George S. Garrett Co., 1578 Lee St. Phone DIckens 6-2433

THE ALLEN SHERMAN HOFF CO., 259 E. Lancaster Ave., Wynnewood, Pa.

Georgia, Atlanta 24: Boiler Equipment Service Co., 1079 Alco St., N.E. Phone MElrose 4-7373

Louisiana, New Orleans 24: Power Specialty Co., 5534 Canal Blvd. Phone GA 9575

Reference Guide and Buyer's Directory for the South-Southwest

Missouri, Kansas City 2: Hughes Machinery Co., 4212 Main St. Phone VA 1-7021

Missouri, St. Louis 17: Rhodes Equipment Co., 1401 So. Brentwood Blvd. Phone WO 2-8820

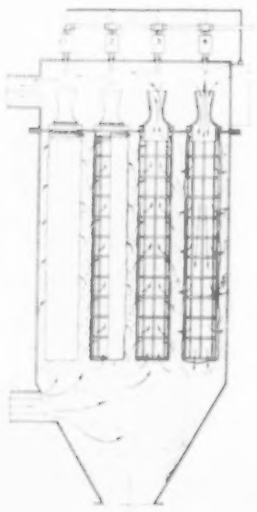
Ohio, Cincinnati 37: Hare Equipment Co., 1720 Section Rd. Phone ME 1-4703

Texas, Houston 6: Power Specialty Co., 200 Kipling St. Phone JA 4-7421

AMERICAN STANDARD, INDUSTRIAL DIV., AMERICAN RAD. & SANITARY CORP., Tireman Street, Detroit 32, Mich.

Alabama, Birmingham 5: J. A. Rhodes, 2201 Highland Ave., S.

Florida, Jacksonville 7: J. E. Sheppard, 1230 Hendrix Ave.



Georgia, Atlanta 5: Wm. McKinney, 3224 Peachtree Road, N.E.

Kentucky, Louisville 2: S. L. Samuels, 1622 Heyburn Bldg.

Louisiana, New Orleans 12: Walter Cooke, 816 Howard Ave.

Maryland, Baltimore 1: A. J. Simpson, 1800 N. Charles St.

Missouri, Kansas City 8: H. H. Burkart, 1627 Main St.

Missouri, St. Louis 1: C. T. Hastings, 1710 Railway Exchange Bldg.

North Carolina, Charlotte 4: E. S. DeWitt, 1314 East 4th St.

Oklahoma, Tulsa 3: Howard S. Shaffer, 421 Wright Bldg.

South Carolina, Greenville: M. W. Brown, Conway Building

Tennessee, Knoxville 19: R. M. Mingea, 1301 Hannah Ave., N.W.

Tennessee, Memphis 3: T. J. O'Brien Engr. Co., 668 S. Main St.

Texas, Dallas 2: D. L. Clithero, 1213 Texas Bank Bldg.

Texas, Houston 2: James A. Wheeler, 1909 Travis St.

Virginia, Richmond 20: J. G. Johnson, 2317 West Broad St.

West Virginia, Charleston 23: Louis H. Benner, 1029 Virginia St., East

B-I-F INDUSTRIES, INC., 345 Harris Avenue, Providence 1, R. I.

Florida, Jacksonville: W. D. Taulman & Assocs., P. O. Box 4851

Georgia, Atlanta: W. D. Taulman & Assocs., 415 E. Paces Ferry Rd., N.E.

Louisiana, Baton Rouge: B-I-F Industries, Inc., 2056 Peachtree Blvd. at Fla.

Oklahoma, Oklahoma City: Ritzhaupt and Co., 100 Block E. 8th St., Edmond P. O.

Tennessee, Memphis: Engineered Plant Equip., Inc., 2435 North Boulevard

Texas, Amarillo: Lewis Dodson Engr. Co., 75 Hughes Street

Texas, Austin: Texas Filter Co., Inc., 2032 South Lamar

Texas, Corpus Christi: Texas Filter, Inc., 109 Chapparral Street

Texas, Dallas: B-I-F Industries, Inc., 4519 N. Central Expressway

Texas, Houston: B-I-F Industries, Inc., 5 Hillside Avenue

Texas, San Antonio: Texas Filter Co., Inc., 300 Blum Street

BRESLOVE SEPARATOR COMPANY, Commonwealth Building, Pittsburgh 22, Pa.

Maryland, Baltimore 1: Melvin J. Muhly, 712 Madison Avenue. Phone VErnon 7-4793

Missouri, St. Louis 10: B & B Combustion Equipment Company, Room 512, 4030 Chouteau Ave. Phone JEfferson 1-1039

Tennessee, Knoxville 16: Henry F. House, 1623 Melrose Place. Phone Knoxville 2-3061

Virginia, Richmond 1: T. W. Dunkelberger, P. O. Box 40. Phone BElmont 2-1638

BUELL ENGINEERING CO., INC., 123 Williams St., New York 17, N. Y.

Georgia, Atlanta: Evans L. Shuff & Assoc., Inc., Box 12162, Northside Sta., 3120 Maple Drive, N.E.

Missouri, Kansas City 12: Midwestern Power Equipment Co., 1214 W. 47th

Missouri, St. Louis 17: Midwest Machinery Co., 26 Hanley Industrial Court

Tennessee, Memphis 3: Engineered Plant Equipment, Inc., 166 Monroe Ave.

Texas, Dallas 35: Meyer F. Smith Co., 6115 Denton Drive

Texas, Houston 2: Meyer F. Smith Co., 2314 S. Main St.

Virginia, Richmond 19: Jobe & Co., 110 N. 8th

CAMBRIDGE FILTER CORPORATION, P. O. Box 1255, Syracuse 1, N. Y.

Alabama, Birmingham: Palmer & Lawrence, 3110 Clairmont Ave., Phone FAirfax 3-1543

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Missouri, Kansas City: D. M. Allen Company, 3021 Main St. Phone LOgan 1-9741

Missouri, St. Louis: R. R. Waites Co., 4233 Chouteau Ave. Phone JEfferson 5-4368

North Carolina, Charlotte 4: Howard V. Caton Co., 230 N. Torrence St. Phone FRanklin 5-2028

Tennessee, Johnson City: Eustis Lancaster & Assoc., John Sevier Hotel Bldg. Phone WA 6-0141

Tennessee, Memphis: Flinn Engineering Co., 134 North Cleveland. Phone BRoadway 8-1632

Tennessee, Nashville: Vernon S. Tupper Co., 206 Tuck Bldg. Phone ALpine 4-6559

Texas, Dallas: J. R. Dowdell & Co., 3160 Irving Blvd. Phone FLeetwood 7-5631

Virginia, Richmond 19: Shultz & James, Inc., 9 East Cary Street. Phone MIlton 4-3021

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Georgia, Atlanta 5: Chas. T. Pottinger, 2475 Rivers Rd., N.W. Phone CEdar 3-2307

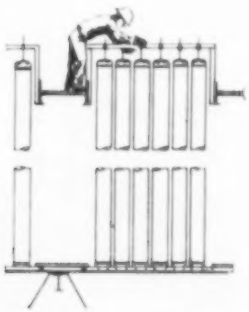
Louisiana, New Orleans 22: D. B. Fried, Jr., 6027 Chatham Dr. Phone EVergreen 1052 or MAgnolia 2691

North Carolina, Charlotte: Howard V. Caton Co., 230 N. Torrence St. Phone FRanklin 5-2028 and 5-5869

Tennessee, Knoxville 1: Tidewater Supply, 1506 Island Home Ave. Phone 2-0163

Tennessee, Memphis 12: J. E. Hurston, 2470 Poplar Ave. Phone GL 8-4461 or 8-4462

Tennessee, Nashville 3: Wm. C. Armistead Co., 103 16th Ave. Phone CHapel 2-5006



Texas, Corpus Christi: L. S. Pawkett & Co., P. O. Box 3476. Phone 4-3166

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Florida, Miami: Anthony C. D'Angelo, 815 N.W. 144th St. Phone MUrray 8-6997

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Texas, Houston: Marshall, Neil & Pauley, Inc., 3513 W. Dallas Ave. Phone JAckson 9-3596

Texas, San Antonio: R. S. Ryden & Co., 109 Barrera St. Phone CApital 6-7229

THE DAY COMPANY, 810 Third Ave., N.E., Minneapolis 13, Minn.

Georgia, Atlanta: Carl Eric Johnson, 412 Walton Bldg. Phone JAckson 2-2632

Missouri, St. Louis: D. W. Capstick, 2337 So. 13th St. Phone MOhawk 4-4567

Tennessee, Memphis: Walter H. Gay, P. O. Box 3452. Phone MUtual 3-2822

Texas, Dallas: Tate & Rue Equipment Co., 5542 Dyer St. Phone EMerson 1-2859

Virginia, Roanoke: L. W. Finks, 362 Allison Ave., S.W. Phone DIamond 2-2123

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Alabama, Birmingham: Bratton Sales Engineers, 2812 12th Ave. North. Phone FA 4-8534

Georgia, Atlanta 3: Hairston & Co., 400 Five Ivy Building. Phone JAckson 4-0873

Louisiana, New Orleans 18: Engineering Sales Co., 171 Audubon Blvd. Phone UN 6-2701

Louisiana, Shreveport: J. W. Cherry Co., 151 Olive St. Phone 5-8733

North Carolina, Charlotte: R. E. Mason Co., 1726 Hutchison Ave. Phone FR 5-5747

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Tennessee, Elizabethton: Paul Chapman & Assoc., 413 East "D" St. Phone LI 2-6561

Tennessee, Memphis 4: Flinn Engineering Co., 123 N. Cleveland St. Phone BR 8-1632

Tennessee, Nashville 3: James A. Harwell, 1123 Church St. Phone ALpine 6-0247

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DeVILBISS METAL FABRICATORS CO., 5741 Russell St., Detroit 11, Mich.

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Missouri, St. Louis 10: DeVilbiss Company, 6265 Clayton Street. Phone MIssion 7-0306

Texas, Dallas 7: DeVilbiss Company, 2468 Irving Boulevard. Phone RIverside 1-4052

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Alabama, Birmingham 4: Bratton Sales Engineers, 2812 12th Ave., North. Phone FAirfax 4-8534

Alabama, Mobile 5: Bratton Sales Engineers, P. O. Box 5025. Phone GA 6-5216

Florida, Jacksonville 3: H. L. McMurry Co., P. O. Box 2548. Phone EL 6-1371

Florida, Miami 32: McMurry & Co. of Miami, 33 N. E. 6th St. Phone FR 1-7664

Florida, Orlando: McMurry & Co., 4252 Kendrick Rd.

Florida, Pensacola: Bratton Sales Engrs., P. O. Box 4627

Florida, Tampa 2: McMurry & Co. of Tampa, Inc., 114 So. 12th St.

Georgia, Atlanta 5: Thermal Engineering Co., P. O. Box 12215. Phone CE 7-8664

Kansas, Mission: Tudor Engineering Co., 6116 Johnson Dr. Phone HE 2-5255

Kentucky, Louisville 2: Thermo Control Co., 704 W. Market St. Phone BU 3-8717

Louisiana, New Orleans 22: David B. Fried, Jr., 6027 Chatham Dr. Phone EV 1052

Louisiana, Shreveport: R. F. Zimmerman & Co., Inc., P. O. Box 1721. Phone 3-3549

Maryland, Baltimore 18: R. W. Pentecost & Co., 100 East 20th St. Phone HO 7-7590

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North Carolina, Charlotte: Chet Adams Co., 823 Professional Bldg. Phone ED 3-4572

North Carolina, Greensboro: Chet Adams Co., P. O. Box 3073. Phone BR 3-0566

North Carolina, Raleigh: Chet Adams Co., P. O. Box 366. Phone TE 4-6448

Oklahoma, Oklahoma City: E.M.E.C.O. Co., 811 N. Virginia. Phone CE 2-8769

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Virginia, Norfolk 13: Chet Adams Co., 3329 Chesapeake Blvd. Phone UL 5-2211

Virginia, Richmond: Chet Adams Co., 715 W. Grace St. Phone MI 3-7331

FARR COMPANY, P. O. Box 90187, Airport Station, Los Angeles 45, Calif.

Alabama, Birmingham: Brownlee-Morrow Engineering Co., P. O. Box 3155, 745 N. 44th St. Phone LYric 2-8143

Arkansas, Little Rock: T. J. O'Brien Engineering Co., 915 W. 2nd St.

Florida, Miami: McMurry & Company of Miami, 33 N. E. 6th St. Phone FR 1-7664

Florida, Ponte Vedra Beach: Earl W. Seibert, P. O. Box 85. Phone ATwater 5-6133

Florida, Tampa 9: Robert S. Belcher, 201 S. Woodlynne Ave. Phone REdwood 6-1443

Georgia, Atlanta: Thermal Engineering Co., P. O. Box 12215, 314 Buckhead Ave., N.E. Phone CEdar 7-8664

Kentucky, Louisville 7: R. L. Craig Co., Inc., 195 Colony Way. Phone TWinbrook 6-6464

Louisiana, New Orleans 18: Engineering Sales Co., P. O. Box 4134, 171 Audubon Blvd. Phone UNiversity 6-2701

Louisiana, Shreveport: John H. Reed Co., P. O. Box 4131, 3109 Alexander Ave. Phone 8-8603

Maryland, Baltimore 1: F. C. Clifford, Inc., 245 W. Chase St. Phone MUlberry 5-4077

Mississippi, Jackson 2: Air Filter Sales & Service Co., 449 Dory St. Phone 5-3971

Missouri, Kansas City 8: Air Filter Sales & Service, 901 E. 19th St. Phone VIctor 2-2850

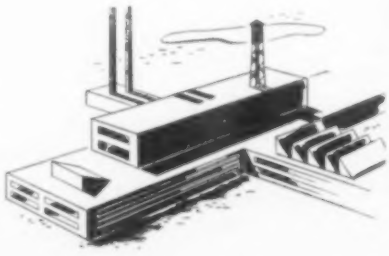
Missouri, St. Louis 3: St. Louis Air Filter Sales & Service Co., 3408 Washington Blvd. Phone OLive 2-4985

North Carolina, Charlotte 1: Chet Adams Co., 823 Professional Bldg. Phone EDison 2-6721

North Carolina, Greensboro: Chet Adams Co., P. O. Box 3073, 1052 Battleground Ave. Phone BRoadway 3-0566

North Carolina, Raleigh: Chet Adams Co., P. O. Box 366, 210 Carolina Bldg. Phone TEmple 4-6448

Ohio, Cincinnati 23: F. W. Jenike Co., 1758 Elmore St. Phone MUlberry 1-2222



Oklahoma, Oklahoma City: Eldon C. Thomas Co., P. O. Box 862, 627½ N.W. 2nd. Phone CE 6-8137

Tennessee, Knoxville: J. M. Dooley & Associates, P. O. Box 215, 1832 McCalla Ave. Phone 2-3655

Tennessee, Memphis 3: T. J. O'Brien Engineering Co., 668 S. Main St. Phone JAckson 6-0339

Tennessee, Nashville 3: Air Filter Sales & Service Co., 1529 Demonbreun St. Phone ALpine 6-3322

Texas, Dallas: Marshall, Neil & Pauley, Inc., P. O. Box 35424 (Zone 19), 2512 W. Mockingbird Lane (Zone 35). Phone FLeetwood 1-5347

Texas, Houston 19: Marshall, Neil & Pauley, Inc., 3513 W. Dallas Ave. Phone JAckson 9-3596

Texas, Lubbock: Bob Carow Company, P. O. Box 3206, 2129 56th St. Phone SHerwood 4-9700

Virginia, Norfolk 13: Chet Adams Co., 3329 Chesapeake Blvd. Phone ULysses 5-2211

Virginia, Richmond 20: Chet Adams Co., 715 W. Grace St. Phone MI 3-7331

West Virginia, Charleston 31: James R. Mason, P. O. Box 3043, 603 Brooks St. Phone DIckens 4-4415

THE FLY ASH ARRESTOR CORP., 275 North First St., Box 1883, Birmingham 1, Ala.

Louisiana, Metairie: Factory Sales & Engr. Co., P. O. Box 693, 512 N. Causeway Blvd. Phone VE 3-1843

Texas, Houston 1: Haylett O'Neill, P. O. Box 1166, 2510 Travis St. Phone JA 9-3879

THE GREEN FUEL ECONOMIZER CO., INC., 627 Main St., Beacon, N. Y.

Alabama, Mobile: Industrial Power Equipment Co., Inc., 951 Government St.

Florida, Tampa 1: Pat Flanagan, Inc., 3703 Granada St. Phone 64-6131

Georgia, Atlanta: John A. Dodd, 299 Techwood, N.W. Phone JAckson 3-7331

Texas, Dallas: Harold O. Knape & Co., 3002 Commerce St. Phone RIverside 7-7596

Texas, Houston 4: Harold O. Knape & Co., 3011 San Jacinto St. Phone JAckson 6-2729

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Florida, Clearwater: M. E. Neprash, 181 Bayside Dr. Phone 38-6895

Georgia, Decatur: C. B. Bastin, P. O. Box 396. Phone BUtler 4-3221

Louisiana, New Orleans: J. A. Williams, P. O. Box 13303. Phone GAlvez 0084

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Oklahoma, Tulsa: Chalmers R. Wood Co., 1537-39 E. 11th St. Phone LU 4-2533

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Texas, Houston: Homer Gilliam, P. O. Box 12272. Phone OLive 4-6222

THE JOHNSON MARCH CORP., 3018 Market St., Philadelphia 4, Pa.

Alabama, Birmingham: Hager Equipment Company, 2612 North 24th St. Phone FAirfax 2-6097

Florida, Lakeland: Linder Industrial Machinery Co., P. O. Box 2037, 5325 Mulberry Road. Phone MUtual 8-3171

Georgia, Atlanta 9: Osgood and Associates, P. O. Box 7383, Station C. Phone TR 5-7804

Maryland, Baltimore 18: T. E. Byerly Company, Inc., 12 W. 22nd St. Phone HOpkins 7-2926

Missouri, Kansas City 11: Hughes Machinery Company, 4212 Main St. Phone VAlentine 1-7021

Missouri, St. Louis 30: Plant and Process Equipment Co., P. O. Box 3082. Phone PArkview 7-2337

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Ohio, Cincinnati 6: Tarkington-Van Atten Co., 2904 Woodburn Ave. Phone PLaza 1-1435

South Carolina, Columbia: Henry F. Priester & Associates, P. O. Box 4185, 1612 Westminster Drive

Tennessee, Knoxville: Crowell Engineering Company, P. O. Box 241. Phone 8-5122

Tennessee, Memphis 17: Walter H. Gay, P. O. Box 3452. Phone MUtual 3-2822

Virginia, Hopewell: Wilburn Dibling, P. O. Box 457. Phone GLenview 8-2189

West Virginia, Charleston 23: Industrial Equipment Co., P. O. Box 2747, 913 Brooks St. Phone DIckens 3-7606

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Kentucky, Louisville: Liberty Engineering & Manufacturing Co., Inc., 1450 S. 15th St. Phone ME 5-2655

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North Carolina, Statesville: Nosco Lewis Machy. & Supply Company

North Carolina, Statesville: General Equipment Co.

Tennessee, Memphis: Wilco Machine Works, Inc., Municipal Airport. Phone WH 3-4555

Virginia, Richmond 21: Massey, Wood & West, Inc., Box 5008

KOPPERS CO., INC., Metals Products Div., 200 Scott St., Baltimore 3, Md.

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Alabama, Mobile: Bratton Sales Engineers, P. O. Box 5025

Alabama, Mobile: Engineering Sales Co., P. O. Box 6031, 1853 Calmes Street

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Florida, Lakeland: Stevens Associates & Co., P. O. Box 2331, 504 W. Beacon Road

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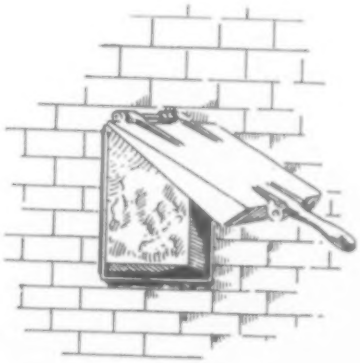
Florida, Tampa: McMurry & Co. of Tampa, 114 S. 12th Street

Georgia, Atlanta: Acousti Engineering Co., 1550 Southland Circle N.W.

Georgia, Atlanta 5: Evans L. Shuff & Assoc., Inc., P. O. Box 12162, Northside Station, Suite 122-124, 3120 Maple Drive N.



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Louisiana, Baton Rouge 6: Engineering Sales Co., 4824 Woodside Drive

Louisiana, New Orleans 18: Engineering Sales Co., 171 Audubon Blvd., P. O. Box 4134

Louisiana, New Orleans 25: Marshall, Neil & Pauley, Inc., P. O. Box 13276, 4048 Thalia Street

Louisiana, New Orleans 13: McLellan Equipment Co., P. O. Box 238, 2375 Tchoupitoulas Street

Louisiana, Shreveport: D. G. Silvey Co., P. O. Box 4295, Kings Highway Bldg., 316 E. Kings Highway

Maryland, Baltimore 10: Bart Aldridge, 6014 Lakeview Road

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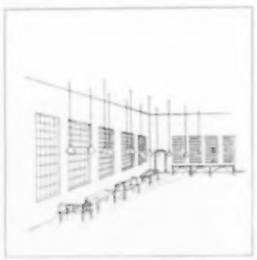
Missouri, St. Louis 17: Childress & Company, 1021-23 S. Big Bend Blvd.

Missouri, St. Louis 17: Sample Brothers, 2010 Big Bend Blvd.

North Carolina, Charlotte: Howard V. Caton Co., 230 N. Torrence Street



Ohio, Cincinnati 9: J. W. Snyder, 4115 Edwards Road

Oklahoma, Oklahoma City 5: Gordon E. Ervin Co., Inc., 2300 N. Oklahoma Street

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Oklahoma, Tulsa: K-A-S-E Company, 527 McBirney Bldg.

Oklahoma, Tulsa 20: Nolan Sales Corporation, P. O. Box 6066, 421 N. Cincinnati Street

Texas, Corpus Christi: L. W. Pawkett & Co., P. O. Box 3476, Kleberg Station

Texas, Dallas 1: Geo. J. Fix Co., 2413-15 Commerce Street

Texas, Dallas: W. D. Jenkins, Southland Hotel 224

Texas, Dallas 19: Gilbert Engineering Co., Inc., P. O. Box 35142, 6414 Maple Avenue

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Texas, Odessa: Vance Supply Company, 115 East First Street

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Georgia, Atlanta 9: Donald F. West, 1343-1345 Spring St., N.W. Phone TRinity 4-6378-79

Louisiana, Baton Rouge: E. C. Hansen, 10644 Allyson Street, Phone WAlnut 1-8194

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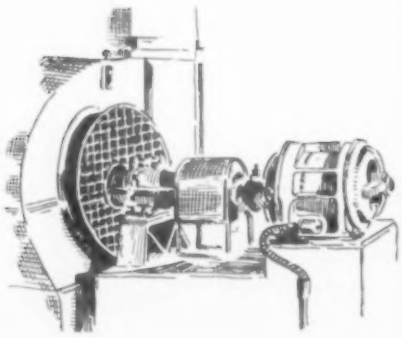
North Carolina, Charlotte 5: L. F. Little, 3214 Forest Road, Phone FRanklin 7-5676

Oklahoma, Tulsa 3: J. T. Williams, 1015 S. Cincinnati Ave. Phone CHerry 2-4204

Tennessee, Knoxville 19: J. C. Sheehan, 507 Rockingham Drive, Phone KNoxville 8-9815

Tennessee, Memphis 17: B. G. Tarkington, 5232 Sequoia Avenue, Phone MUtual 5-8661



Texas, Corpus Christi: G. L. Scott, 4722 Wexford Drive. Phone ULysses 2-4706

Texas, Dallas: R. V. Fitzpatrick, 11439 Crestbrook Dr. Phone EMerson 1-2987

Texas, Dallas 7: W. H. Gates, 1630 Oak Lawn Avenue. Phone RIverside 7-4209

Texas, Beaumont: R. E. Anderson, 5880 Clinton Ave. Phone TErminal 5-7164

Texas, Houston 6: D. M. Cook, 3745 Greenbriar Drive. Phone JAckson 3-3636-7-8

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OWENS-CORNING FIBERGLAS CORP., 717 Fifth Ave., New York 22, N. Y.

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Oklahoma, Tulsa: K. R. Miller and W. D. Simmons, 902 American Air Lines Bldg. Phone DIamond 3-9123

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Texas, Houston: D. E. McCrory & W. H. Wiseman, Jr., 1939 West Gray St. Phone JAckson 6-1851

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Georgia, Augusta: L. W. Wagner, P. O. Box 842. Phone REgent 6-7258

Maryland, Baltimore 2: Alverson Engineering Sales Co., 1623 Mathieson Bldg. Phone MU 5-8291

Missouri, St. Louis 22: E. C. Gilmour & J. G. Richeson, 207 Lombardi-Brooks Bldg., 10406 Manchester Road, Kirkwood, Mo. Phone TAylor 2-0212

Texas, Houston 2: B. H. Marks & D. M. Sanner, 201 Scanlan Bldg. Phone CApitol 7-1663

RENNEBURG, EDWARD & SONS CO., 2639 Boston Ave., Baltimore 24, Md.

Alabama, Birmingham 9: Consolidated Engineering Co., P. O. Box 6011. Phone TRemont 9-1831

Georgia, Atlanta 5: Consolidated Engineering Co., 3272 Peachtree Rd., N.E. Phone CEdar 7-1606

Texas, Houston 4: The J-N-G Company, Box 8251. Phone MA 3-6148

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District of Columbia, Washington 6: Meleney Engineering Co., 720 Mills Bldg. Phone DI 6329

Georgia, Atlanta 24: Boiler Equip. Service Co., P. O. Box 13138. Phone ME 4-7373

Louisiana, New Orleans 12: William S. Huey Co., 202 Board of Trade Annex

Maryland, Baltimore 18: Energy Control Corp., 2127 Maryland Ave. Phone BE 5-6926

Missouri, Kansas City 2: Hughes Machinery Co., 4212 Main St. Phone VA 7021

Missouri, St. Louis 17: Rhodes Equipment Co., 1401 S. Brentwood Blvd. Phone WO 2-8820

Oklahoma, Tulsa 3: The Laney Co., Kennedy Bldg. Phone DI 3-1873

Texas, Houston 7: Alliger & Sears Co., P. O. Box 2217, 2203 Fannin St.

West Virginia, Charleston 23: Industrial Equipment Co., 913 Brooks St.

RUEMELIN MFG. CO., 3871 North Palmer St., Milwaukee 12, Wisc.

Alabama, Birmingham: Alloy Rods & Abrasives Co., 929 No. 15th St.

Alabama, Birmingham: Safety Engineering & Supply, 617 No. 10th St.

Louisiana, New Orleans: Industrial Machinery Co., 1201 So. Gayoso St.

SCHNEIBLE, CLAUDE B. CO., P. O. Box 296, Detroit 32, Mich.

Alabama, Birmingham 10: W. T. Barr Assoc., P. O. Box 6637. Phone WOrth 1-3758

Missouri, St. Louis 2: M. A. Bell Co., 210 Lombard St. Phone GArfield 1-3110

Texas, Houston 6: B. A. Wilson Co., P. O. Box 6243. Phone JAckson 6-2741

THE W. W. SLY MFG. CO., P O Box 5939, Cleveland 1, Ohio

Alabama, Birmingham 9: Hudson Engineering Co., 1831 28th Ave., So. Phone TRemont 9-0221

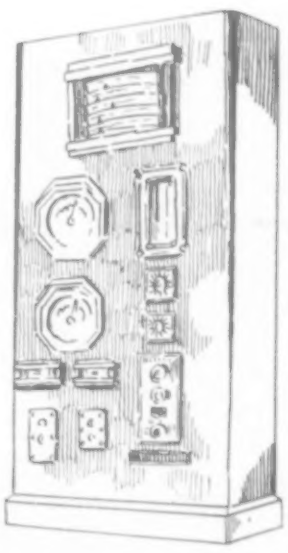
Louisiana, New Orleans 25: Devlin Bros., P. O. Box 13428, 4424 Earhart Blvd. Phone JAckson 5-7984

Texas, Houston: Sinclair Co., P. O. Box 35312. Phone PArkview 3-3521

TORIT MFG. CO., 1133 Rankin, St Paul 16, Minn.

Florida, Orlando: E. E. McCarthy, P. O. Box 1219. Phone GA 2-6144

Texas, Dallas: R. V. Miles, 2909 Canton Phone RI 7-0595



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TRION, INC., 1000 Island Ave., McKees Rocks, Pa.

Florida, Miami 38: Sanders & Hollander, P. O. Box 56, Little River Sta. Phone PL 4-9894

Florida, Ponte Vedra Beach: Earl Seibert, Box 86. Phone ATwater 5-6133

Florida, Tampa: Robert S. Belcher, 201 S. Woodlynne Ave. Phone REdwood 6-1443

Georgia, Atlanta 3: Walter Strickland Co., 152 Ellis St., N.E. Phone JAckson 5-1611

Louisiana, New Orleans 25: Devlin Bros., P. O. Box 13428, 4424 Earhart Blvd. Phone JAckson 5-7984

Mississippi, Jackson: Air Filter Sales & Serv., P. O. Box 2445. Phone 2-7289

Tennessee, Knoxville: Rogers & Morgan, 800 19th St. Phone 3-7942

Tennessee, Memphis: T. J. O'Brien Engrg. Co., 668 S. Main St. Phone JA 6-0339

Tennessee, Nashville 3: Air Filter Sales & Serv., 1529 Demonbreun St. Phone ALpine 6-3322

Texas, Dallas 26: Harold O. Knape & Co., 3002 Commerce St. Phone RIverside 7-7596

Texas, Houston 4: Harold O. Knape & Co., 3011 San Jacinto St. Phone JAckson 6-2729

Texas, San Antonio 6: Langhammer-Rummel Co., P. O. Box 367. Phone CApitol 6-6291

U. S. HOFFMAN MACHINERY CORP., 105 Fourth Avenue, New York, N. Y.

Georgia, Decatur: A. J. Kroog Co., 203 Professional Bldg. Phone DRake 7-6711

Kentucky, Louisville: Miller Engineering Corp., 119 East Barbee Ave. Phone MElrose 5-6357

Louisiana, New Orleans: Fred M. Erichson, 5705 St. Roch Avenue. Phone FAirview 2454

Maryland, Baltimore: Hamilton Easter, Inc., 605 Reisterstown Road. Phone HUnter 6-7888

Missouri, St. Louis: Hagedorn & Gannon, 4030 Chouteau Avenue. Phone OLive 2-7457

Oklahoma, Tulsa: W. H. Mason Company, 801 West 23rd St. Phone LUther 5-8138

Tennessee, Knoxville: Rogers & Morgan, 800 19th Street. Phone 3-7942

Tennessee, Memphis: Craig Industrial Equip., 1101 Poplar Avenue. Phone BRoadway 5-5777

Texas, Dallas: General Power Equip. Co., 5527 Dyer Street. Phone EMerson 8-4655

Texas, Houston: Bruce A. Wilson Co., 1659 Hawthorne. Phone JAckson 6-2741

Virginia, Lynchburg: Campbell King Co., 611 Riverside Drive. Phone VIctor 5-9479

West Virginia, Charleston: Mason & Barry, 603 Brooks Street. Phone DIckens 4-4415

WESTERN PRECIPITATION DIV., Joy Manufacturing Co., 1000 West 9th St., Los Angeles 54, Calif.

Alabama, Birmingham 9: McConnell Sales & Eng. Corp., P. O. Box 5825. Phone TRemont 1-3501

Florida, Tampa 1: Pat Flanagan, Inc., P. O. Box 445. Phone 64-6131

Georgia, Atlanta 5: Western Precipitation Div., 3252 Peachtree Rd., N.E. Phone CEdar 3-6255

North Carolina, Charlotte 1: Piedmont Products Co., 1420 N. Tryon St. Phone FRanklin 6-7441

Texas, Houston 19: Petro-Chem. Equip. Co., Inc., 3513 West Dallas Ave. Phone JAckson 9-3596

WHEELABRATOR CORP., 1135 South Byrkit St., Mishawaka, Ind.

Alabama, Birmingham 6: L. J. Wieschaus, 2912 North 77th St. Phone LYric 2-5162

Missouri, St. Louis 5: F. E. Noyes, Room 107, Jacy Bldg., 201 S. Central Ave. Phone PArkview 6-0506

Texas, Houston 8: E. P. Clarke, P. O. Box 7424, Polk Building, Room 208, 627 W. 19th Street. Phone UNderwood 4-1733

WRIGHT-AUSTIN CO., 3245 Wight St., Detroit 7, Mich.

Alabama, Birmingham: Dixie Engineering Co., 812-813 Protective Life Bldg. Phone FAirfax 2-0417

Florida, Tampa: B. A. Thomas & Assoc., 2925 W. Hillsborough. Phone REdwood 7-4512

Georgia, Atlanta 13: Abernathy-Thomas Engr., 222 14th St., N.W. Phone TR 4-4291

Louisiana, New Orleans 13: Gulf Engineering Co., 1000 S. Peters St. Phone JAckson 2-4421

North Carolina, Charlotte 1: Kirk Cousart & Assoc., 715 W. Morehead St. Phone FR 5-7737

Oklahoma, Tulsa 20: Snyder Company, Inc., 1432 E. Sixth St. Phone GIbson 7-0126

Tennessee, Kingsport: Abernathy-Thomas Engr., 341-345 W. Market St. Phone CIrcle 5-6151

Texas, Houston 21: Gulf Engineering Co., 4425 Dixie Dr. Phone JAckson 8-0591

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Theoretically, you merely select the problem whose solution will net the largest profit and solve it. But difficulties are immediately encountered.

Computer Problem Analysis

By R. BRUCE SHIPLEY

MR. SHIPLEY is an electrical engineer in the system planning branch of TVA. For the past few years he has been responsible for the engineering applications of digital computers to planning problems.

Mr. Shipley is the author of several technical articles on computer application and design. He was awarded a grade of Fellow in the American Institute of Electrical Engineers for this work.

THIS PAPER is intended to describe some of the philosophy needed in the use of digital and other computers in the solution of industrial problems. The subject of problem analysis cannot be completely separated from the other problems involved in the use of computers.

As a part of problem analysis, it is necessary to take into account the capacity of the available computing facilities as well as the people and the organizations that are to prepare the problem and to use the resulting solution. This discussion assumes a practical organization with limited capacity and support, rather than an ideal theoretical organization.

Theoretically, it is merely necessary to select the problem whose solution will net the largest profit and solve it. Difficulties are immediately encountered. Most recognized problems have a solution — of a sort. Few, if any, major utility problems have been solved correctly from a theoretical point of view. The computer application engineer is usually faced with finding better methods for solving old problems. He must select those whose improved solutions will yield a net gain after the cost of computing has been deducted. In general, these problems are easy to find but difficult to solve.

For example, most utilities are faced with the problem of selecting the proper transmisison voltage for their future use. This problem becomes immediately involved with long-range load forecasting. With a proper load forecast for the particular service area, it is conceivable, although not particularly likely, that exactly the correct voltage will be chosen.

But the proper selection of transmission voltage should take into account the existing or possible future ties with neighboring utilities. Thus, the problem immediately expands to all utilities that may become interconnected within the useful expected life of the transmission system.

Neither is this enough. Manufacturing facilities must also be considered. To reduce manufacturing costs and to keep them competitive, it would seem logical to select similar preferred voltage levels for the utilities even though they will never be interconnected. This, of course, means the consideration of all electric utilities and all manufacturing facilities.

Assume that some company has the capability of solving such a problem correctly. What could be done with the solution? Is there any chance that the company could even recover the cost of the solution — not to mention the necessity for making some profit?

For the utility and manufacturing industries and the public as a whole to benefit from the solution, it becomes necessary to apply the solution in practice. Would the other organizations accept the solution as correct and make use of it? Obviously, such a solution must have organizational support to be of value regardless of its validity. Support of this nature is not presently available.

Choice of Problems

Possibly, the computer applications engineer finds similar problems on a small scale within his own organization. Thus, it becomes very important in the analysis of problems to select those problems whose solutions will be used.

The next important consideration is to fit the problems to the particular group of individuals who are to solve them. Frequently the individuals who are to solve the problems have been selected before the problems have been identified, and therefore may not have the particular qualifications necessary to attack the more important ones. The mismatch here may be even more ridiculous than to expect a single individual to physically construct a major steam plant in his own spare time.

An ambitious but unscrupulous computer man in such a hopeless situation can resort to extreme deception. On a complex problem he

Photograph of Engineering Computer — Courtesy International Business Machines Corp.

may merely use the computer as a typewriter and make it print predetermined answers. Such a situation can go undetected for years in the face of uninformed management. A successful computer organization will avoid this situation by fitting the problems to the available personnel.

Omit Trivial Problems

Having selected usable problems that can be solved, they should be further subdivided into trivial and non-trivial groups. The trivial group will include those that are presently being solved by hand methods. Generally such problems should not be solved by the digital computer since they result in inefficient use of modern devices.

In some problems more human work will be required to prepare the data for the computer than is required to do the whole job by hand. This type of problem can usually be applied with little mental effort or disturbance to the established routine of the utility organization.

Under pressure to fully utilize a newly acquired computer, however, the application engineer may be compelled to load the computer with problems of a trivial nature. Evidence of this trend may be found in the listing entitled "Electrical Utility Applications of Digital Computers" published by AIEE. Once the computer is loaded with problems of a trivial nature it becomes unavailable for useful work.

At this point the problems remaining must be scanned to find out if their solution depends upon unobtainable data. If this is the case there is little reason to proceed. If the data can be made available, it is then desirable to find out if some other organization has a suitable program available for the particular job. Or if a program is not available, possibly the problem has been properly formulated and is ready for programming.

The elimination of useless or impossible problems makes it possible to effectively use the personnel assigned to problem solution. This is important because of the relatively large costs associated with computing. It must be expected that even the simpler programs will cost thousands of dollars. The really useful programs must be expected to cost hundreds of thousands of dollars. Of course, the many big companies are spending many times these amounts because the problems have not been properly solved.

What Comes First?

Assuming reasonable capacity of computing facilities and computer organization, many problems will remain. Next comes the problem of selecting which projects shall be attacked first.

In many cases, it will definitely be known what problems can be solved by computer methods. Short-circuit currents, self and mutual drop coefficients, etc., fall into this category. The cost of solving these problems by conventional methods will be known with reasonable accuracy and the cost of solving them by digital means can be estimated rather closely. This type of problem provides good training for personnel in becoming familiar with the digital techniques. In contrast, complex problems of engineering economics are difficult or impossible to evaluate in advance of actual solution.

Examples

An example of a complex problem is power system reserve requirements. Here one must place a value on quality of service with regard to voltage regulation, continuity of service, etc. These requirements vary from customer to customer and the correct standard has probably not been reached.

Frequently such intangible problems are handled by policy and unless the policy is correct or can be changed, little value can be assigned even to a perfect digital solution. It is in the area of engi-

neering economics that the more difficult and valuable computer problems will probably be found.

Next, suppose an unformulated problem of engineering economics has been selected for study. In general it will not be known how valuable a solution would be. Consequently, it may not be wise to attempt a completely general full-scale solution at first. It may be desirable to select a small scale special case of the problem that can in some way be related to the large system and that can be solved at a fraction of the cost.

Extreme care must be exercised in selecting a special case to be used; it must in some way be representative of the system that may ultimately be solved. The selection should be made by a person or persons familiar with the engineering problems of the large system, familiar with the mathematical and other techniques of solution, familiar with the capabliities of available computers, as well as having a good knowledge of economics and the organization.

Then methods must be found to solve the special case. These may be mathematical, statistical, topological, or a combination depending upon the problem. At this stage the problem must be viewed from engineering and mathematical points of view. Ultimately the points of view must be consistent and the method chosen must be logical from all standpoints or otherwise a computer solution will not likely be achieved.

Procedure

In general, the services of more than one person or more than one group of persons will be desirable. Conferences with all divisions concerned should be held to obtain their contributions and attitudes. Once the model and method of solution has been chosen, it will be necessary to turn the work over to the numerical analysis group to determine methods or techniques for solving the mathematics.

If the mathematics can be solved directly, the problem will be greatly simplified. Usually there will be no direct solution of the mathematics and techniques will have to be developed. Frequently such techniques will work only within a certain range of values and engineering and mathematical consultation will have to be made available to see if the range proposed by the numerical groups is adequate.

When these questions are answered the work is ready for the programming group. This group translates the problem into machine language so that the proper arithmetical operations are performed on the data. This group will likely wish to change most of the techniques to make their work easier and further conferences will need to be held to facilitate the work.

It will not be possible for the programming group to make a workable program unless the previous analysis is correct. It will, however, be possible for the programming group to ruin the whole job unless their work is done properly. Once the programming is done, the de-bugging procedure will probably require some modifications to the techniques that have been used in setting up the problem. This will call for further changes before the problem can finally be run on the computer.

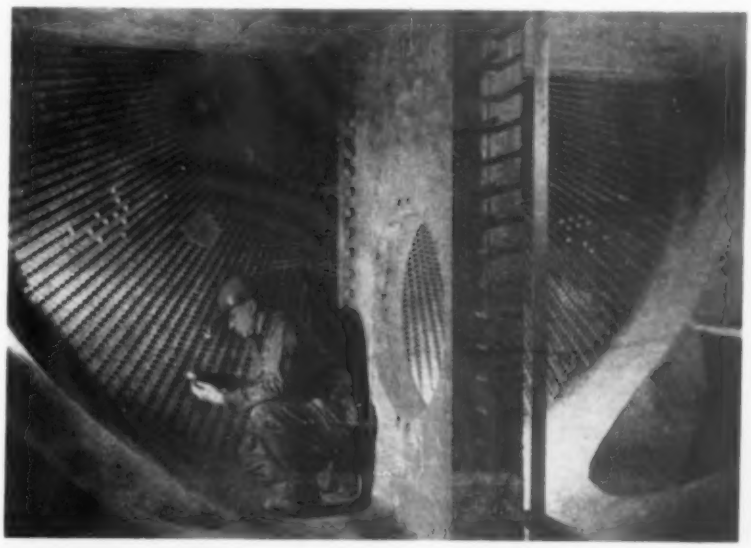
Once the program is finally running, possibly many sets of data will be used to see just how the desired answers change with the problem variables. Careful study of the results will probably yield an insight into whether the problem should be further pursued or abandoned. If it is to be pursued, the next step is to extend the special case to the general case. Many of the techniques that were used will be directly applicable to the final problem.

For problems of medium complexity, it probably should be estimated that the cost of problem analysis is approximately five times the cost of programming and digital computer costs if competent analysts are available.

The relative cost of analyzing the problems should be expected to increase as problem complexity increases and as programming and digital techniques improve. It will be observed that analysis costs will decrease when high-quality analysts are used.

30 Year Life Expected

A WORKMAN is shown checking some newly installed stainless steel tubes at Monongahela Power Company's Rivesville Power Plant in West Virginia. Allegheny Ludlum Steel Corporation supplied the stainless steel tubes. This is the first time that an entire condenser was outfitted with stainless steel tubes. The new tubes are expected to last 30 years. Tubes formerly used had a life expectancy of 10 years.



MANAGEMENT CLINIC

Conducted by ROBERT H. EMERICK, North Charleston, S. C.

Firing On-the-Spot Is Seldom Wise

Question . . . . . .

WE ARE a supervisory group and we are much disturbed by a new policy initiated by top management of the company that employs us.

This policy was adopted over our protests, and in brief operates this way:

A supervisor cannot fire a subordinate even for obvious cause, unless the dismissal is also approved by a supervisor of a higher level, or a member of the executive staff.

We feel that such a policy seriously weakens the authority of the individual supervisor, since he no longer has the personal power of dismissal. It means that in some cases 24 hours or more will elapse after an offense has been committed, and in that time everybody, including the Union, can get into the act and possibly nullify the whole situation.

If our supervisors are discredited in this way, what's going to happen to discipline?

Answer . . . . . .

FROM WHAT WE HAVE OBSERVED, when a supervisor is discredited, the reason usually is rooted in some hasty or ill-judged action of his own. For example:

A supervisor whom we'll call Jones, came to work in a bad temper as a result of losing some domestic arguments at home. While in this mood, he happened to observe Riley, a sheet metal worker, apparently gossiping with a worker in the wood shop.

Jones promptly jumped on Riley for loafing and for being away from his own shop without permission. It was a good chance for blowing off some temper, and Jones did so, using high explosive words. Riley then retorted with some hot comments of his own, and this led Jones to fire him on the spot, charging both loafing and insubordination.

The Union filed a grievance which ended up in arbitration. The arbitrator judged Jones to have acted hastily and to have used inciting language. Riley was restored to his job, and paid for the time lost.

The policy of denying unqualified dismissal authority to supervisors is aimed at avoiding such costly and untoward developments as characterized the Jones-Riley dispute. The delay between the alleged offense and the application of punishment acts as a kind of cooling off period in which both sides have a chance to see aspects of the situation that were hidden behind the smoke of the moment.

We don't believe that supervisory prestige will be diminished, or discipline weakened by the new policy. And it's always better to be certified right at the beginning, than to be proved wrong at the end.

Another possible advantage of having a "higher-up" consider important disciplinary actions is the fact that he can more readily check any questionable elements with legal and personnel specialists. Being partially relieved of decisions on such technicalities leaves the supervisor more time for such definite duties as teaching new employees, assigning work, improving procedures, maintaining enthusiasm, etc.

YARWAY IMPULSE* is the only steam trap that continually samples fluid in the line to maintain condensate discharge close to steam temperature, eliminating condensate as soon as it forms.

Condensate seals the small control orifice against steam leakage under all normal operating conditions.

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ONLY ONE MOVING PART. A SMALL STAINLESS STEEL VALVE, ACTUALLY "FLOATS" ON THE CONDENSATE LOAD.

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Charles Breaux (left), Supreme plant engineer finishes up the installation.

Breaux flips circuit breakers and sends power to the machinery to start refinery again after an interruption of only 10 hours.

Louisiana Engineer Remembered What He Read

Quick Panelboard Replacement Cut Sugar Refinery Outage

By CHARLES BREAUX
Plant Engineer
Supreme Sugar Refinery
Supreme, Louisiana

THE IMPORTANCE of keeping up with new developments and new products was forcibly brought home to the Supreme Sugar Refinery, Supreme, La., when at exactly 6:15 on a Sunday morning, the 600-volt panelboard that distributed power to the entire refinery burned out.

The refinery, one of the largest in the state, was knocked out as completely as if it had been struck by a fire or flood. The refining process was stopped immediately, and with it a daily production of 1,400,000 pounds of sugar was halted.

The situation was serious. The panelboard that had burned out was an obsolete unit, and to get a duplicate of that outmoded panel meant ordering one from a factory hundreds of miles away, then waiting for it to be custom-made. This would take at least two to three weeks, with a loss to Supreme Sugar of possibly 20,000,000 lb of sugar.

In this nearly disastrous situation, our practice of allotting a certain amount of time each week to investigating new plant and production developments paid off. We remembered that a representative of Federal Pacific Electric Company had visited Supreme Sugar six months before to talk about one of his company's new products — a pre-fabricated standardized panelboard made up of modular units.

The main advantages of this panelboard, as pointed out that day, seemed the answer to Supreme Sugar's problem. First, because the panelboard was available from a local electrical distributor, it could be delivered fast — in fact, right over the counter. Second, because the breakers plugged into the board and the whole construction was modular, installation was fast and easy.

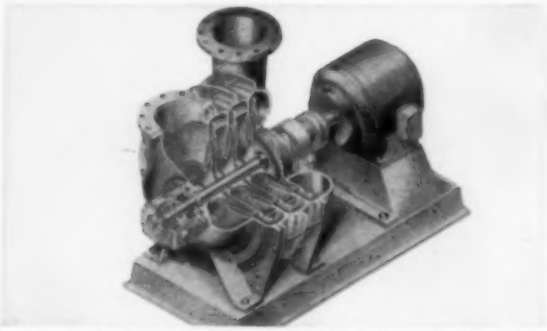
At this point, the representative was called in New Orleans, and over the telephone, Supreme Sugar explained its predicament. As expected, there was no trouble meeting requirements. The new-type panelboard line was made up on standard components, four basic enclosures and the proper combination of single, double, and triple three-pole breakers able to handle all main services from 225 to 600 amperes.

Finding out the particular com-

U. S. HOFFMAN MACHINERY CORP.

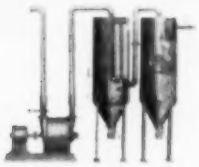
AIR APPLIANCE DIVISION — 103 Fourth Ave., New York 3, N. Y.

Designers and manufacturers of multistage centrifugal air and gas blowers/exhausters—portable and stationary industrial vacuum cleaning systems — pneumatic conveying equipment — dust collectors — Smooth-Flow tubing and fittings — continuous metal, rubber and plastic strip/sheet dryers — steam and gas operated air heaters — valves and accessories.



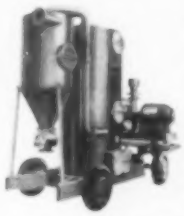
MULTISTAGE CENTRIFUGAL BLOWERS & EXHAUSTERS

Rugged cast iron Hoffman blowers deliver clean dry air or gas in continuous duty applications such as combustion, agitation, drying, vacuum cleaning, sewage and waste treatment, pneumatic conveying, air squeegee, ore flotation, circulation of liquids, asphalt blowing, etc. Pressures to 10 psig, vacuums to 12" hg, and volumes to 20,000 cfm. Outboard mounted bearings. One piece cast aluminum impellers. Dynamically balanced rotors. No internal wearing parts. Vibration free operation. Constant pressure or vacuum throughout capacity range. Suitable for direct drive by motor, turbine or engine. Common steel baseplate.



STATIONARY VACUUM CLEANING SYSTEMS

Permanently installed stationary vacuum systems ranging from 3 hp to 100 hp permit cleaning operations throughout the plant with collection at a central location. These systems will help prevent product contamination, insure better housekeeping, salvage valuable materials, eliminate manual handling and disposal. Heavy duty dust separators receive material and large filter cloth areas insure thorough separation. Suction hoses are inserted into strategically located inlet valves in piping system.



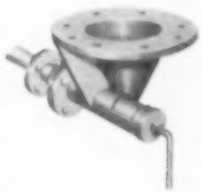
PNEUMATIC CONVEYING EQUIPMENT

Hoffco-Veyor pneumatic systems keep dry, powdery and granular materials on the flow. Permanent installations transfer a variety of materials including chemical powders, starch, plastic pellets, pharmaceuticals, etc., from one point to another in the production process. Rugged portable Hoffco-Veyors such as this trailer mounted unit, can be used to handle catalyst, clay, sand, etc., in refineries, brick plants and chemical installations.

PORTABLE VACUUM CLEANING UNITS

Maximum efficiency in industrial housekeeping can be achieved with Hoffman heavy duty portable vacuum cleaners which range from 1½ hp through 15 hp. Mobility and flexibility enables the operator to do an efficient and thorough job of vacuum cleaning anywhere in the plant. Typical of the Hoffman portable units is the 7½ hp Hoffco-Vac 75 developing 7.8" hg suction and capable of operating two hose lines simultaneously. Filtering area 48 sq. ft. Removable dust bucket with capacity of 7.5 cu. ft.

MATERIAL INTAKE VALVE



Unique feeding valves permit the introduction of dry free flowing materials into vacuum conveying systems. Design incorporates offset air and material entry ports making it possible to regulate material flow and yet allow air to enter the line for purging. Separate air inlet protects connected equipment from full suction of the system. Constructed of cast iron, stainless steel or bronze. Valves can be modified for air cylinder operation.

PERISTALTIC VALVE

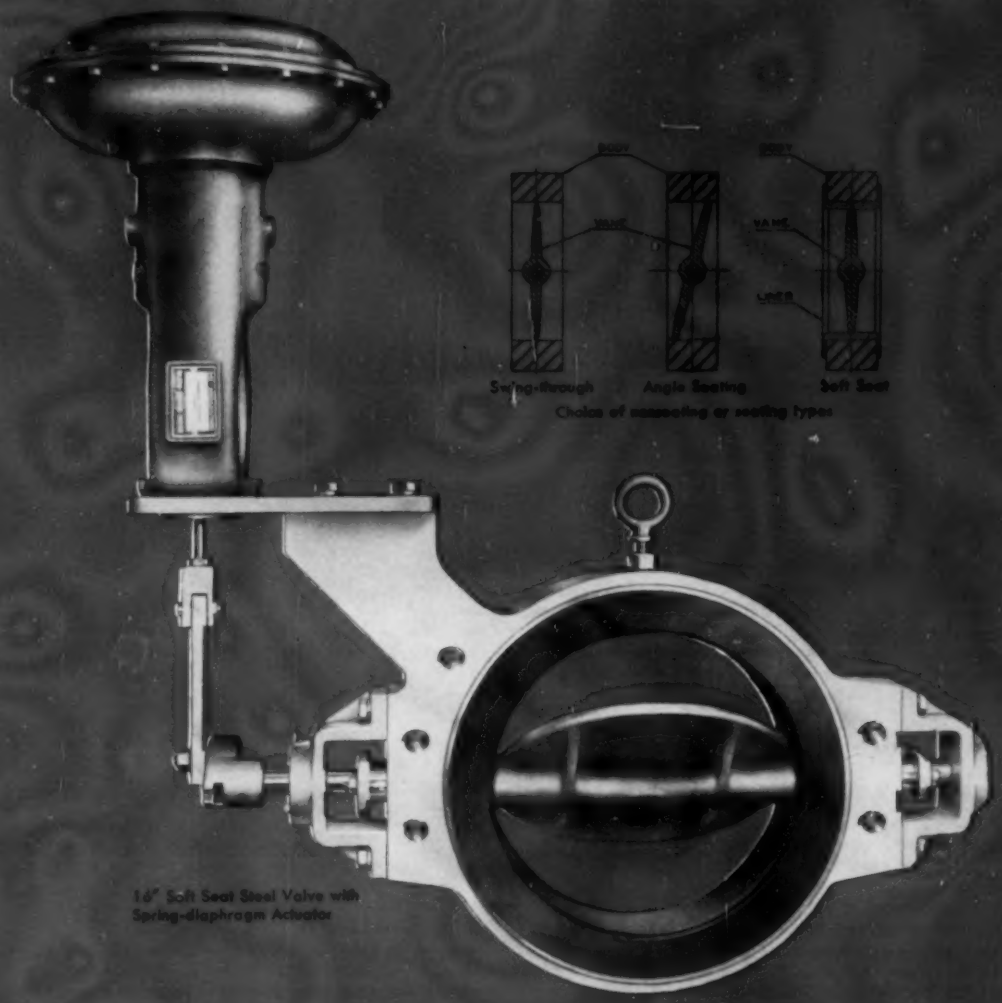
Rubber diaphragm valve utilizes peristaltic action to discharge materials in controlled quantities. Designed to handle the type of product which can not be successfully passed through a rotary feeder, Alternate opening and closing of sheet rubber diaphragms facilitate passage of coarse abrasives or odd shaped materials. Elliptical body section and sandwiching of diaphragms insures positive closure against high differential pressures. Fail-safe feature provided in event of rupture of either diaphragm.

ROTARY DISCHARGE VALVE

These chain-driven air-locks of cast semi-steel construction discharge materials from pneumatic systems. Valves have torque limiting drive sprockets to protect against jamming and overloading. Equalizing connections permit attachment of bleed lines to vacuum or pressure source. Inspection of interior can be made through access port without disassembling valve. Fabricated and cast multi-bladed rotors are designed for interchangeability. Standard horizontal shaft gear motors.

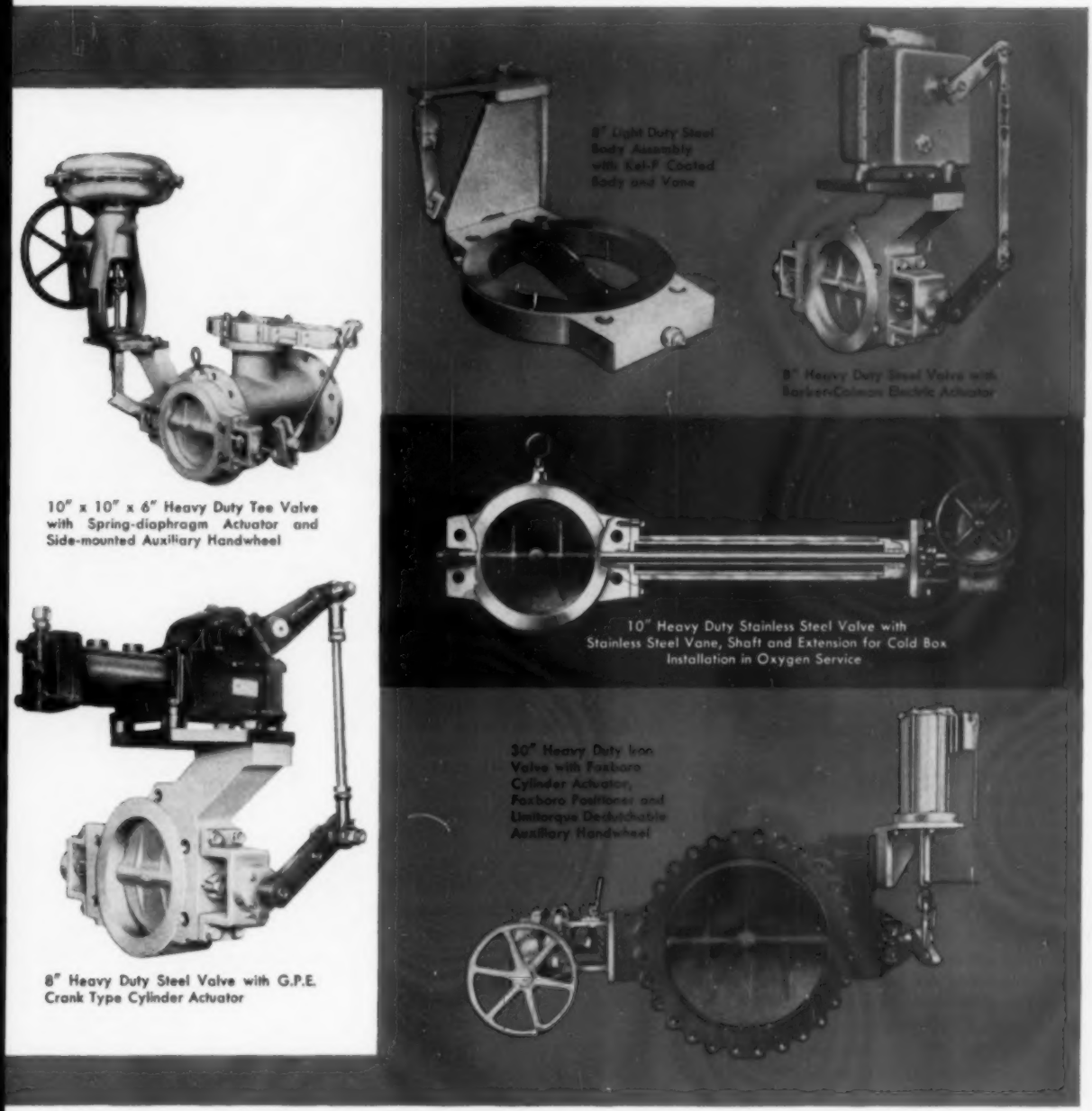
Write for illustrated catalogues. Our application engineers are available for a survey of your production and maintenance problems without obligation.

from Mason-Neilan...



Flexibility in Butterfly Valve Application

With Wide Selection of Actuators, Choice of Swing-through or Seating Types


8" Light Duty Steel Body Assembly with Kel-F Coated Body and Vane
8" Heavy Duty Steel Valve with Barber-Colman Electric Actuator
10" x 10" x 6" Heavy Duty Tee Valve with Spring-diaphragm Actuator and Side-mounted Auxiliary Handwheel
10" Heavy Duty Stainless Steel Valve with Stainless Steel Vane, Shaft and Extension for Cold Box Installation in Oxygen Service
30" Heavy Duty Iron Valve with Foxboro Cylinder Actuator, Foxboro Positioner and Limitorque Declutchable Auxiliary Handwheel
8" Heavy Duty Steel Valve with G.P.E. Crank Type Cylinder Actuator

Mason-Neilan offers a broad line of butterfly valves with a choice of nonseating, angle seating, or soft seat wafer bodies and a wide variety of power and manual actuators.

The few typical examples shown here are indicative of the scope of the Masoneilan line. These, and the many other variations available, exemplify the quality and design features resulting from over 75 years of experience in valve manufacturing.

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MASONEILAN

ponents that Supreme Sugar would need was not a problem either. All the refinery had to do was: (1) list the branch circuits; (2) determine the number of mounting space units; (3) calculate the panel size for the required mounting of space units; and (4) select the breakers and enclosures by catalog numbers.

On the basis of this information, it was decided that Supreme Sugar would need a 600 ampere panelboard (72" x 8¾" x 28¾") which would accommodate 12 F Frame breakers.

The next step was to get the equipment. To do this, we only had to drive to New Orleans. At the warehouse of an electrical distributor (Interstate Electric) who had been alerted by the representative, we picked out of stock the right assortment, the particular enclosure needed, and the correct breakers.

While the panelboard was being obtained, men at the refinery were readying the installation so it could receive the new panel. By the time the equipment had arrived, the wires were in position and stubbed up. Now all that had to be done was put in the enclosure, tie in the feeder to the enclosure bus, then stab-in nine individual new breakers, connect the branch conductors, and finally cover the unused section of the bus with molded plates in order to secure a dead front.

Incredible as it seemed, less than ten hours from the time the original panelboard had burned out Supreme was sacking sugar again, and all because the company had made it a point to keep abreast of new developments.

Condensate Pump Shaft Seals

CONDENSATE pumps which take suction from a condenser operating under a high vacuum are usually equipped with packed stuffing box type glands where the shaft passes through the casing. The inner portion of the stuffing box contains several rings of packing next to which is a lantern ring and outside of the lantern ring, there are additional rings of packing. The contents of the stuffing box are held in place by a bolted gland follower.

Usually the shaft glands are subjected to the same vacuum which exists in the pump suction. These glands should be supplied with pure condensate under pressure which should be introduced at the threaded connection leading to the lantern ring. This condensate is needed for two reasons:

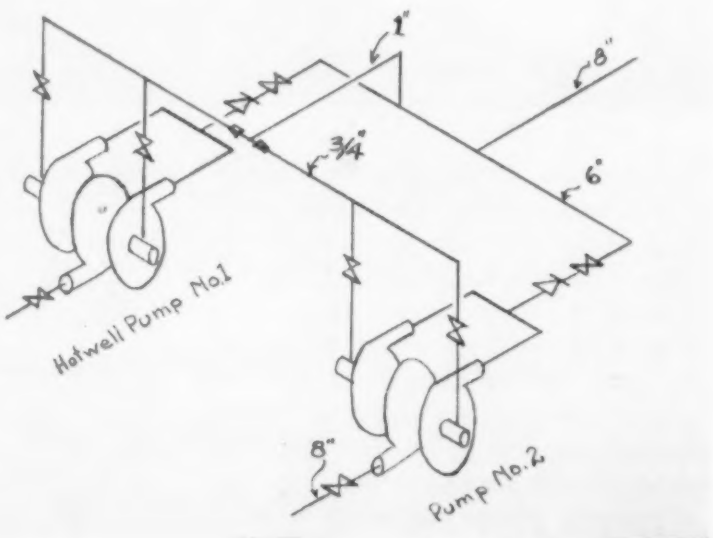
1. It serves as a seal and prevents air from being drawn into the pump when it is not operating.
2. It lubricates and cools the packing in the stuffing box when the pump is operating.

There seems to be a misapprehension in some quarters as to where and how the condensate should be supplied. Sketch No. 1 shows schematically a satisfactory arrangement of a gland sealing water system. Note that condensate is taken from the condensate pump discharge manifold and is piped through valved connections to each stuffing box. The sealing water should be turned on and flowing to the glands of both the pump which is operating and the pump which is idle. The only exception to this rule would be that when the idle pump is isolated for overhaul, the sealing water must, of course, be shut off. Gland sealing water for a pump in operation could be taken directly from its own discharge inside its check valve. However, it is obvious that this arrangement would be useless in sealing the glands of an idle pump.

Demineralized water under suitable pressure and from a reliable source could be substituted for condensate. City water, river water or any water containing more than 3 or 4 parts per million of dissolved solids should never be used for this purpose because it would pollute the condensate and eventually it might be as troublesome as would be leakage of circulating water into the condenser.

The gland followers should be adjusted not so tight as to prevent any water from flowing out along the shaft, but sufficiently so that a very small trickle of water flows past the packing. It is impractical to attempt to recover this negligible quantity of water.

By T. M. Johns



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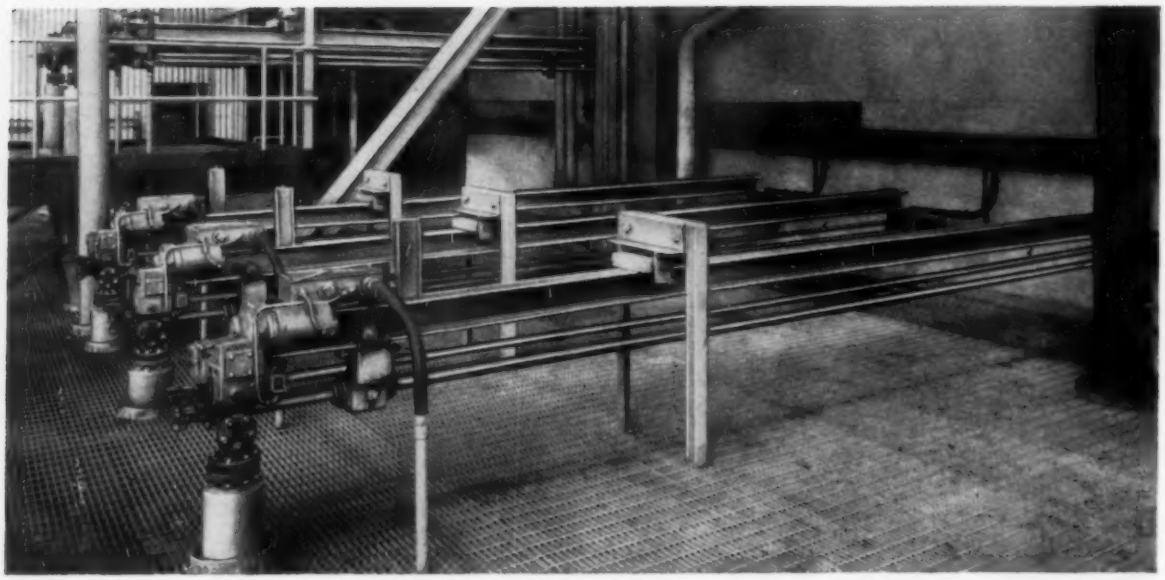

Vulcan Automatic-Sequential System controls soot blowing at new Gannon Station.

As the first modern utility boiler in Florida to be fired by coal, Tampa Electric Company's Gannon Station incorporates the most advanced control systems. Unit 1, with its boiler rating at 950,000 pounds per hour at 1760 psig and 1000 degrees F., uses a Vulcan soot blowing system that features both group and unit control.

Vulcan T-3-E long retractable soot blowers with their dual-motor drives clean Gannon's Unit 1 boiler with double-helix patterns for complete coverage. The system includes Vulcan wall deslaggers and rotary soot blowers—all driven by electric motors and using steam as the blowing medium.

A Copes-Vulcan diaphragm valve reduces steam pressure for blowing and a Copes-Vulcan motor-operated valve is used for shut-off.

A similar Vulcan system will be installed on Gannon's Unit 2, rated at 950,000 pounds per hour at 1760 psig and 1000 degrees F.

Copes-Vulcan offers complete systems for controlling combustion, feedwater, boiler feed pump recirculation, steam temperature, and soot blowing. Whether your boiler is large or small, power or process, Copes-Vulcan can provide a unit or an integrated package, custom designed to your needs. For details, write Copes-Vulcan Division, Erie 4, Pa.

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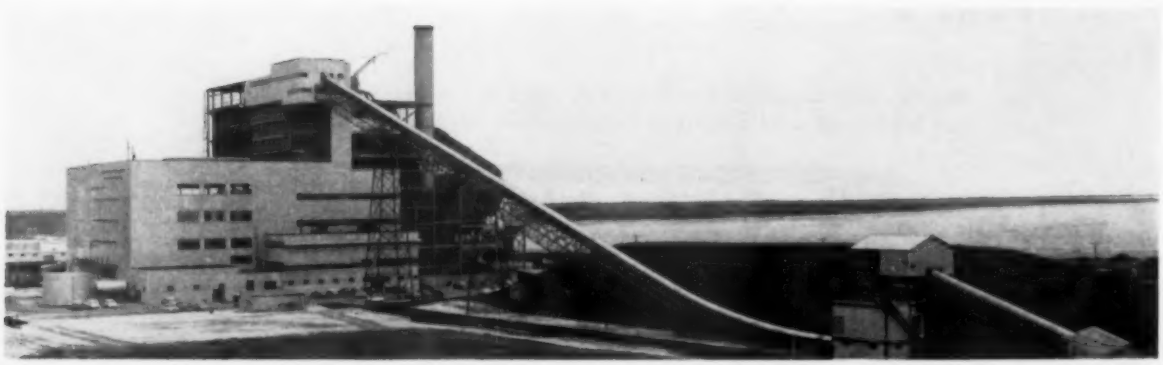
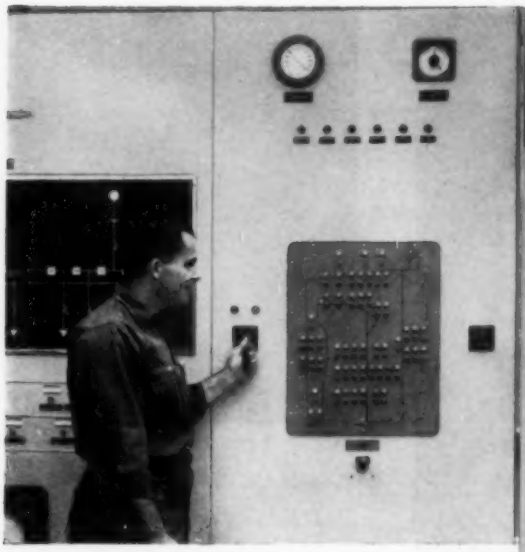
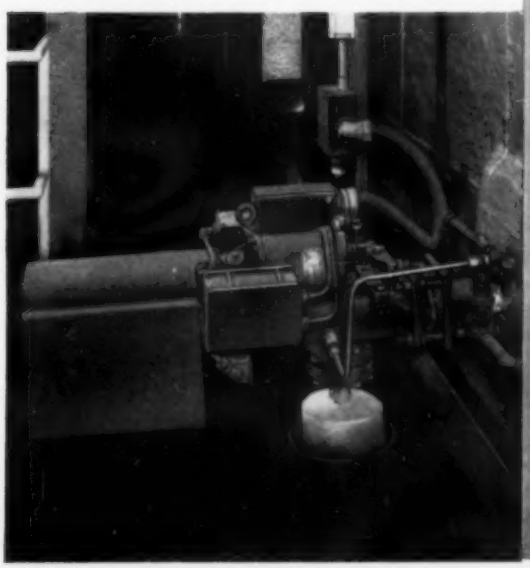


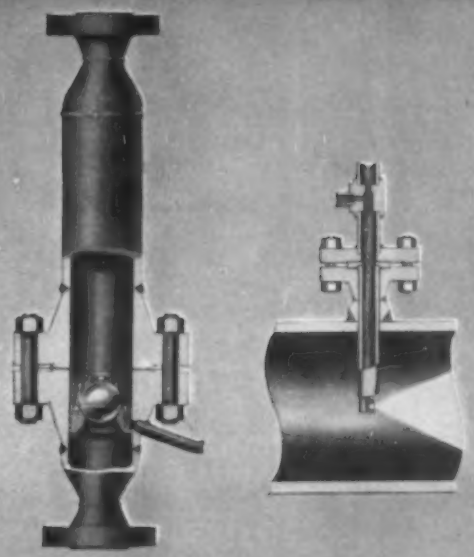
C-V NEWS NOTES



Finger tip control for Gannon's operators . . . with Vulcan's Automatic-Sequential group and unit control. Operator can preselect any number of soot blowers for automatic sequence . . . preselect any number of units or groups of units to be operated individually . . . or switch instantly to single unit operation. Program lights and toggle switches are located on engraved boiler diagram. Automatic-Sequential systems use steam, air or a combination as the blowing medium without a change in equipment. Write for Bulletin 1029.

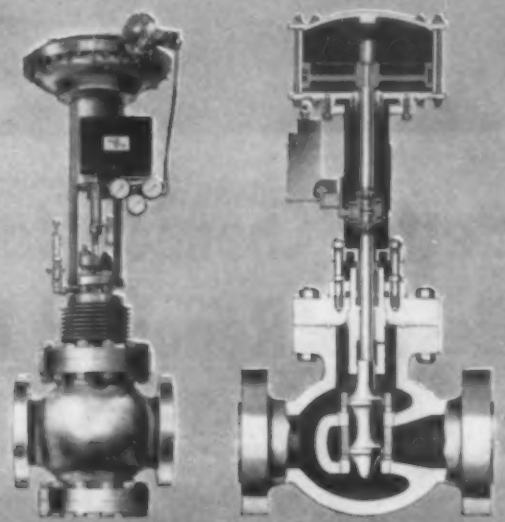
Wall deslagger conserves steam . . . minimizes average slag thickness. Vulcan's RW-3E is equipped with dual motors: one to traverse *fast* to get the nozzle to and from the blowing position almost instantly . . . the other to rotate the tube slowly for thorough cleaning. The RW-3E may be installed indoors or out, at almost any angle from side wall, roof or floor. It has only one outside stuffing box, no threads or working parts in the blowing medium to assure easy maintenance. Write for Bulletin 1034.





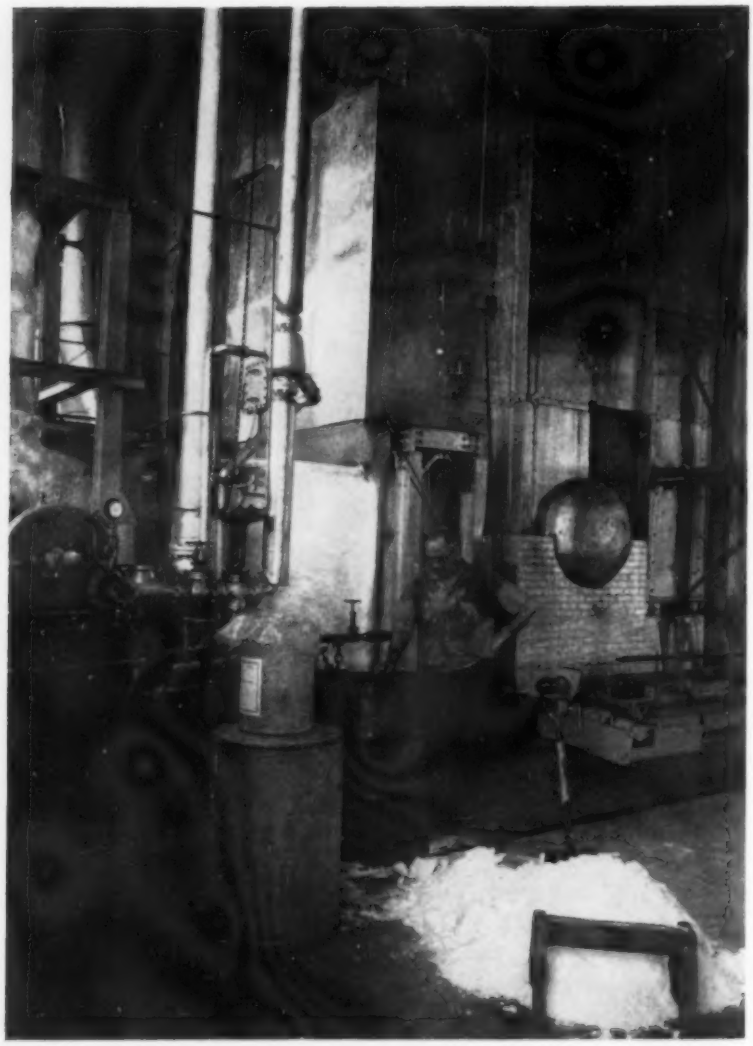
Desuperheaters improve temperature control. Variable-Orifice Desuperheater* (left) uses a weighted steel ball to control orifice opening . . . holds reduced steam temperature constant only twenty feet downstream from desuperheater outlet, even over a 50-to-1 load range. Bulletin 1037. *Patent Applied For

Steam-Assist (right) meets all specifications for conventional steam-atomizing type yet normally uses assisting steam only on light loads where control is most difficult. Mechanical-atomizing types also available. Bulletin 1024-A.



Versatile regulator valves offer new simplicity of design. Diaphragm-type CV-D (left) is designed for remote control service. It can be direct or reverse acting, has excellent rangeability. Piston-type CV-P (right) is designed for high-duty service . . . assures maximum power with precise positioning.

All Copes-Vulcan valves are tailored to the job. The style of valve port is selected to provide optimum control for specified operating conditions. Bulletin 1027.



The boiler in photo at left is being descaled by one man whose equipment consists of a shovel, two 55-gallon steel drums, an eductor, and some hose. Inhibited sulfamic acid cleaner in granular form is dumped on the floor and shoveled into the drums, where it is mixed with heated feedwater to make up the acid solution.

The filling hose was attached to a special connection at the mud drum (see photo above). Boiler held 5,000 gallons, and took approximately four hours to fill. 2,800 lb of sulfamic cleaner were used.

Better Chemical for Descaling Results Reported By Gulf's Supervisor

USING NO TOOLS other than a shovel for handling dry chemical, one man completely descaled a 185 psi, 55,000-pound-per-hour capacity vertical tube boiler without complications, in a recent demonstration at a Gulf Oil Company refinery.

This accomplishment was made possible by the use of an inhibited cleaning formulation based on sulfamic acid. Available in dry, crystalline form, this new type of product eliminates the safety and handling hazards once associated with acid cleaning of industrial equipment.

Typical Cleaning Job

This cleaning project was typical of those carried on at Gulf's refinery as part of the oil company's annual preventive maintenance program. The 688-horsepower boiler, holding about 5,000 gallons, had been in service 7,006 hours prior to its shut-down for cleaning. The refinery's local water supply is from artesian wells, and hardness varies from hour to hour — sometimes widely. Because of this, feedwater is treated and proper blow-down procedure is observed at all times.

Thanks to careful operation, most of the interior appeared to

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Engineer reports that handling the dry chemical is safer, easier and cleaner. Exact concentration control of the cleaning solution is not necessary.

be only lightly scaled, although in spots the deposits were approximately one-quarter of an inch thick. This, plus uncertainty as to the condition of non-accessible parts, prompted William (Hap) Wynans, power supervisor, to proceed with the descaling.

The decision was not difficult to make since Mr. Wynans had supervised similar cleaning jobs in the past and was already familiar with inhibited sulfamic acid cleaner and its performance. Under such circumstances, it seemed far better to proceed than risk the possibility of malfunctions that might require extensive maintenance work and down-time.

Cleaning Procedure

Prior to the cleaning job, a very concentrated, hot solution of the acid was made up in each of two 55-gallon drums placed side by side. Feedwater, pre-heated to 165 F, was pumped at 85 to 95 pounds pressure through an eductor positioned over the drums and on into the boiler at a special mud drum connection.

The acid solution was educted alternately from each drum. When the first drum emptied, valves were turned to take the acid solution from the second. As the second drum drained, another batch of solution was being prepared in the first container. Preparation simply involved filling the drum with hot water while adding seven or eight shovelfuls of inhibited acid from a pile dumped nearby on the cement floor.

A total of 2,800 pounds of sulfamic based cleaner was used for this job. Strength of the acid solution in the boiler was thus brought up to approximately seven per cent. Slightly over four hours was needed to completely fill the unit.

Time Saved

In contrast, seven hours were required for filling during a previous descaling using muriatic acid. Part of the additional time required by the older method was spent in carefully checking the strength of the acid solution being introduced to guard against excessive metal attack. Extra time was also consumed in handling the 50 heavy carboys required for the job as opposed to the seven disposable fiber drums containing the dry acid formulation. In addition, the muriatic solution had to be prepared outside of the shop due to the damaging fumes given off. One of sulfamic's most notable advantages is its complete lack of fuming under any condition.

The filling took place without incident, with the exception of one small hitch. As the concentrated sulfamic acid solution was initially introduced into the boiler, a sizable leak was noticed at an open valve. One of the men calmly tightened the fitting — a difficult feat if muriatic had been used.

After being completely charged with acid solution, the boiler was allowed to remain static. At half-hour intervals, solution samples were taken to check acidity. Approximately six hours after filling, readings leveled off, indicating that the scale (primarily calcium carbonate) had been completely dissolved. The acid solution was then dumped.

Flushing Procedure

The boiler was then filled with city water and immediately drained. Following this, the unit was filled with treated water and slowly brought to a boil. One hundred fifty pounds of 76 per cent flake caustic and 100 pounds of 58 per cent soda ash were then added. Pressure was raised to 50 pounds per square inch, and the boiling continued for about three hours.

The system was again allowed to remain static until it was cool. Then it was drained and reflushed with boiler water. At that point it was ready to be put back on the line. Total time for the whole operation was approximately 72 hours, although Mr. Wynans feels it could be done easily in less time should circumstances require it.

Sulfamic Acid

Mr. Wynans' choice of a sulfamic acid cleaner is based on three points. In line with Gulf's policy, the foremost consideration is safety, both to men and equipment, followed by ease of handling, and economy.

"When we descaled previously with muriatic," he said, "the place was filled with fumes. It took two men, wearing a complete set of rubber protective clothing, to handle the 50 carboys of acid for the job. This time, however, we used seven disposable fiber drums of dry acid cleaner. It is not at all dangerous to work with, and we have found it to be more economical than any other method of cleaning we have tried — either with our own personnel or using an outside contractor."

Physically, sulfamic acid is a white, non-hygroscopic, non-volatile, solid, inorganic acid. It is available either in crystalline or granular form. When dissolved in water, it forms highly ionized solutions which approach the strength of muriatic, sulfuric, or nitric acids. However, sulfamic acid solutions are much less corrosive to all metals than these mineral acids, and are easily inhibited to prevent attack on the metal being cleaned.

Originally prepared more than 100 years ago, sulfamic was little more than a laboratory curiosity until it was first produced industrially in 1940 by Du Pont's Industrial and Biochemicals Department.

Handling difficulties are minimized by using disposable fiber drums, eliminating the need for returning carboys or forfeiting deposits caused by broken containers. Breakage is no problem, and spilled acid is simply swept up. Storing advantages are underlined by the fact that the containers of sulfamic acid cleaner required approximately one-twentieth the floor space needed for carboys.

As a result of these advantages, the use of inhibited sulfamic acid cleaners for cleaning boilers and other industrial equipment has increased greatly in the past few years.

Jig for Jackhammer Holes

THE MODERN jackhammer bit with its carbide insert readily bites its way through concrete and hard stone to produce clean, smooth holes for extending pipe lines or electrical conduits, or the placing of anchor bolts for machinery, partitions and columns.

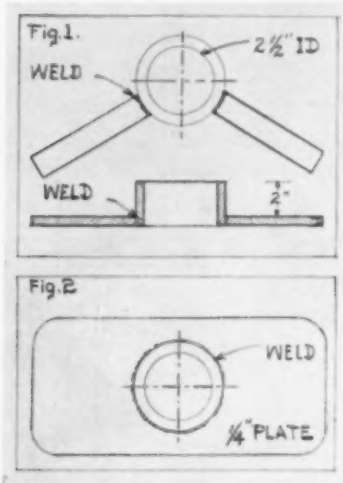

Figure (1) indicates a device that permits drilling according to a marked out plan immediately adjacent to walls or equipment. The socket which guides the bit, as it tends to bounce and bobble on first starting the hole, is cut from 2⅛" I D pipe and welded to the diagonally laid wings cut from strap iron. With the guide ring centered over the laid-off hole markings both feet are firmly planted on the straps, and the air slowly turned on the drill.

Another device is illustrated in Figure (2) having the same pipe section welded onto a ¼" plate with corners rounded off with the oxyacetylene torch. Use of this device is most helpful in starting holes on uneven rock surfaces.

For those projects concerned with dust hazards from the drilling, it is suggested that a section of old truck inner tube be cut to one foot diameter, a holed slit in the middle to receive the shank of the drill, and place it over the starting device where it keeps water and grit from flying in wet drilling.

By PAUL C. ZIEMKE
Clinton, Tennessee

Spotless boiler room with fully modulated CB boilers has been termed by visitors "the most beautiful we've ever seen." Stress is on automatic operation from winter heating to summer cooling.

Two compact, efficient, automatic CB boilers heat five new buildings for International Minerals and Chemical Corporation

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According to Callix E. Miller, A.I.A. Project Manager for IMC, "Our Cleaver-Brooks automatic packaged boilers are efficient and quiet." He added, "Their styling and performance are in keeping with functional design that characterizes our new headquarters."

W. J. Mullineaux, Plant Engineer, reports, "Cleaver-Brooks four-pass, forced-draft design has proved it can keep our operating costs low. The CB boilers fit in well with the automatic system we have and simplify our entire operation. Hinged doors make routine inspection easy."

Architects and Engineers on the job were Perkins and Will. Builder was Turner Construction Company.

For complete information on Cleaver-Brooks packaged boilers like those installed at IMC, contact your representative or write direct to Cleaver-Brooks Co., Dept. C, 305 E. Keefe Ave., Milwaukee 12, Wisconsin, U. S. A.

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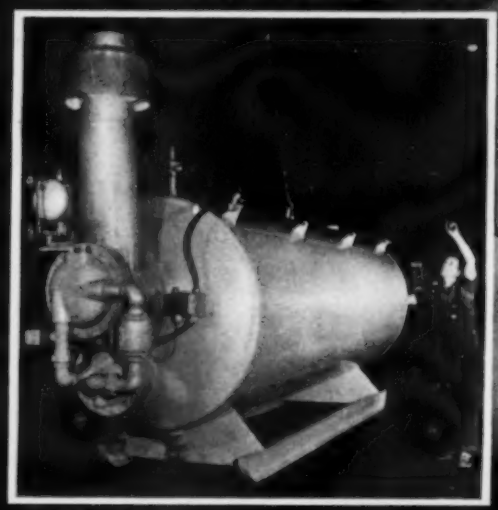

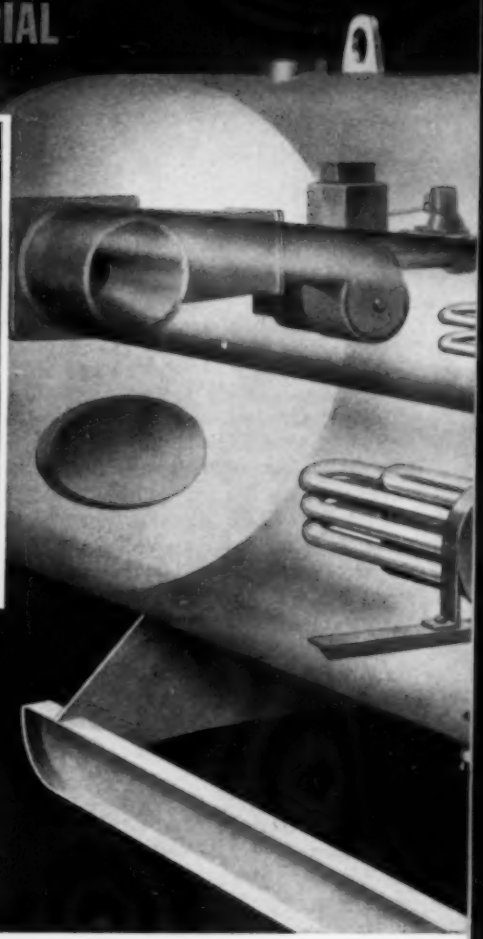

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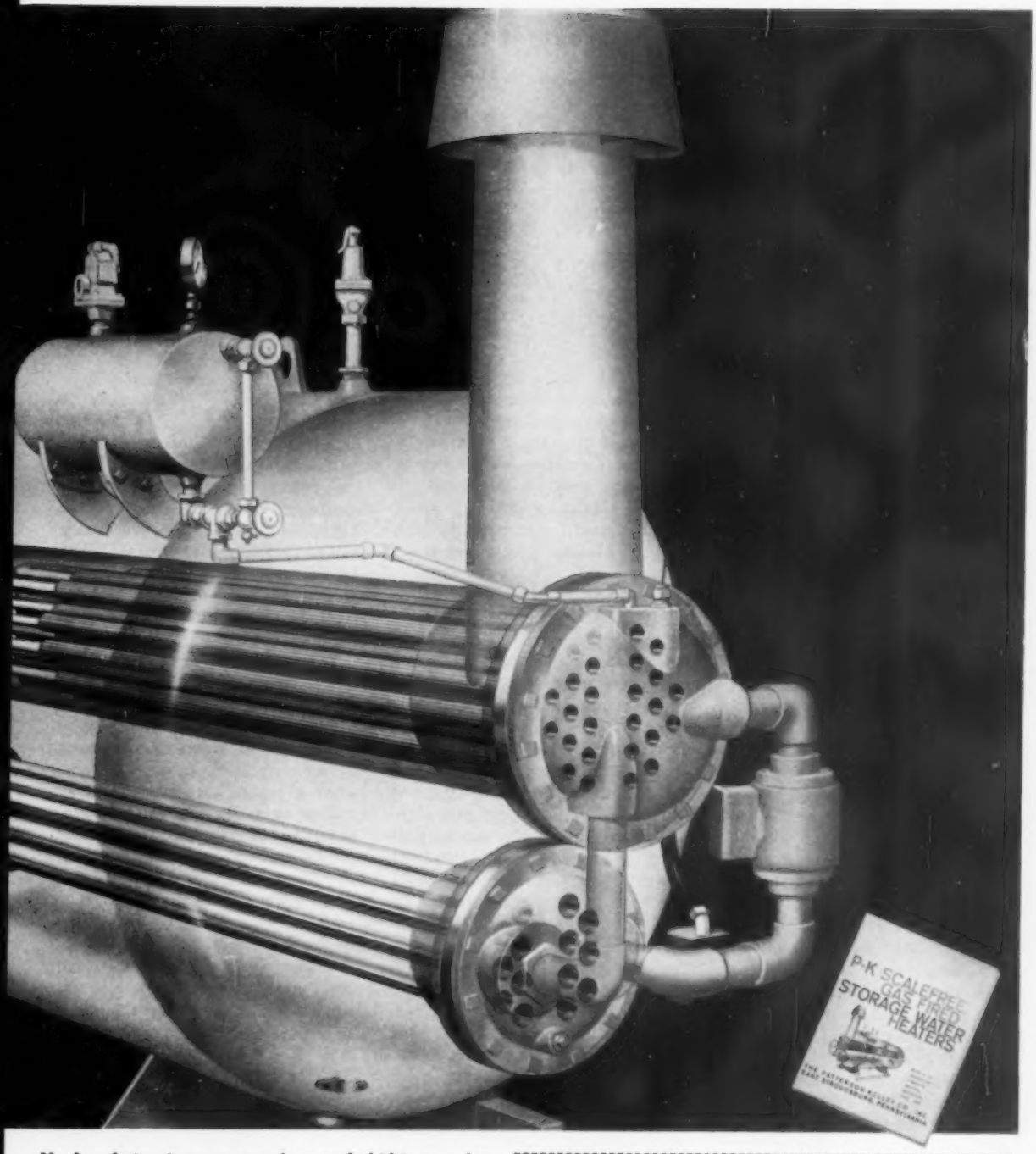
SCALEFREE 230 features a new P-K gas burner. It operates at maximum practical efficiency. Yet it gives almost noiseless service—does not rumble or boom on startup. This permits location almost anywhere in office buildings, institutions, schools, motels, etc.

SCALEFREE 230 is a complete fully automatic package that can be quickly set in place, hooked up, and checked out. It requires only simple electrical, water and gas connections. No stack is needed for extra draft—only a vent.



No foundation is necessary. A rugged skid-in type base is supplied. It is easily accessible for inspection. Tube bundles are removable.

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*Patent pending

Patterson Kelley

107 Morgan Ave., East Stroudsburg, Pa.

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☐ Please have a P-K Sales Engineer call to discuss design and operational features.

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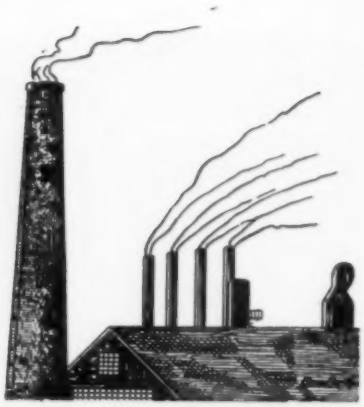
How to Choose the Right WORK UNIFORMS

By JOHN J. ROCHE, President
Institute of Industrial Launderers
Washington, D. C.



Each plant presents its own set of working conditions.

CHOOSING a work uniform for your company's employees is not always easy. Though at first glance it may seem one of the simplest jobs an executive might be call upon to perform.

There is an art to choosing the right uniform: one that combines practicality for the on-the-job conditions of your particular operations with such advantages as (1) safety, (2) advertising and public relations values, (3) neat, clean, attractive appearance, (4) economy, and (5) such factors as colorfastness, controlled shrinkage, and the like.

One difficulty many company executives have with choosing a work uniform for their employees is that they go about it without considering practical, everyday factors like colorfastness and shrinkage.

Many times clever salesmen will show them a flashy sample uniform with glittering piping, a tailored jacket, made of an expensive fabric, and they will be overcome by its attractiveness.

What they may fail to realize is that such uniforms are necessarily far more expensive than a standard color cotton uniform (still the most practical for most companies) and that this leads to difficulties in conducting a successful uniform program with such a garment, and that such a uniform is brand new only once.

The real questions are: What will this uniform look like after it's been laundered twice? Half a dozen times? A dozen times?

Another important question: Is the prospective uniform really adapted to the working conditions the company's employees face?

It makes little sense to choose a uniform (as a nation-wide oil company with tens of thousands of employees actually did) . . . when working conditions faced by the employees doom it to failure from the start.

Not Suited to Job

Consider, briefly, the bare facts of this case. It illustrates the point that even very large companies can make mistakes in choosing uniforms if the choosing is done without adequate wash tests, by persons without uniform experience, acting without the impartial advice of others who have.

This executive, who had no previous experience in the uniform field, and without adequate impartial consultation, had chosen a flashy work uniform for the employees of his nation-wide concern. The uniform he selected was undoubtedly handsome — at first.

Unfortunately it had been selected without due regard for the on-the-job conditions under which it was to be worn. It wasn't practical. The garments couldn't be laundered. They required dry cleaning. Employees were supposed to have this done several times a week at their own expense. Of course, they didn't. They understandably resented spending the money. Longer and longer periods of time passed between cleanings. Some even tried to launder the uniforms at home in the family washer.

It wasn't long before nearly all of the company's workers looked like they'd just climbed out of a refuse dump. Instead of reaping the public relations benefit the company expected, the reverse happened. The uniform eventually had to be abandoned. The financial loss ran into a very large sum. And, of course, the hoped-for benefits from the fancy uniform were never realized.

This points out an important moral. No work uniform should be chosen without adequate wash tests. And, contrary to what you could be told, washing a uniform in some mild soap in lukewarm water is not an adequate wash test.

The industrial stains that employees of industrial companies and power companies will meet in their day-to-day work: greases, tars, and other stubborn stains, are hard to remove. They can't be eliminated by such methods.

Does it make sense to pick a uniform without subjecting it to the kind of washings it is really going to meet?

A Good Uniform

Readers of Southern Power and Industry might be interested to know what members of the Institute of Industrial Launderers who, collectively, have had thousands of years of experience in the uniform field, feel makes for a good uniform:

We believe that cotton work garments are by far the most practical garment for everyday use. Standard colors work out best for most companies. These come in a wide variety of colors, so there is a very

wide range of choice. Buttons generally prove more practical than mechanical closures like zippers. They stand up longer, don't become jammed, and things don't get caught in them.

We're dead set against cuffs on trousers — as a safety factor. We favor bow ties as against neckties, for the same reason. Seasonal weather variations can be met with jackets and heavier garments.

Emblems

If you want a distinctive garment, one that will make folks take favorable notice and remember your company, do it by emblems, not by fancy features on the uniform itself.

Most veterans in the work garment industry agree that to get the maximum advertising benefit, it's generally advisable to keep the uniform simple and have a specially designed emblem for your company. That does two things: (1) it keeps the uniform practical and inexpensive, and (2) it focuses attention on the emblem which bears your advertising message.

Safety Important

Safety, in my opinion, is the most important reason for dressing employees in work uniforms. This should be obvious, but only the well-informed and safety conscious are aware of the vital relationship between work garments and safety.

It's especially important in places like industrial plants or power plants where there's a lot of moving machinery . . . or in the case of linemen who climb poles and are more than normally liable to dangerous falls.

Perhaps you've never thought about it before, but work garments can come complete with all sorts of built-in accident hazards.

Our trade association, the Institute of Industrial Launderers, has worked closely with such responsible groups as the American Standards Association and the National Safety Council in drawing up recommended safety standards for work garments.

An innocent-looking pair of blue jeans may lead to a crippling fall — if it has a loose cuff that can catch on a projection. Would you suspect a simple shirt of being a killer? It could — if a button is lost and a dangling sleeve catches in moving machinery. If the wearer is lucky, he may escape by simply losing an arm. If he's unlucky, he could lose his life.

Aside from the human values involved, accidents run insurance premiums way up.

Do your employees sometimes wear work clothing that has become soaked with oil or chemicals? Lighting a cigarette can turn them into flaming human torches. Occupational skin diseases are a major cause of employee absenteeism. Improper garment cleaning is frequently responsible.

From the foregoing, it's easy to see that work clothing is far more closely tied in with accidents than many have realized. Defects, if neglected, can lead to trouble.

The simple answer is that uniforms should be kept in top repair at all times. We in the industrial laundry field insist that all seemingly inconsequential rips, tears and lost buttons in the uniforms we supply be repaired immediately after every laundering.

If your men furnish their own work garments, you would do well to insist upon the same thing in the interest of job safety.

Free Uniform Help

For several years, the Institute of Industrial Launderers has been offering free, impartial advice about uniforms and other work clothing to executives of companies desiring such advice in instituting a uniform rental program.

The Institute will make available, without charge or obligation of any kind, expert and practical men in the field to consult with responsible company officials. There are no strings of any kind attached to this service, nor does the Institute have any axe to grind.

The product of no individual uniform manufacturer is recommended, nor are the services of any individual laundry recommended for maintenance. Instead, specifications are recommended which will be geared to the special problems of the company concerned.

Rental Programs

How do work uniform rental programs function? The usual arrangement between a company and an industrial laundry works about like this:

The laundry executives consult with company officials about the kind of uniform desired. There is a wide variety of uniforms available, each with its own particular strong points. Color, material texture, strength, wearability and other factors are carefully considered, and the pros and cons of each of many possible uniforms are pointed out to company executives.

Then the uniform is chosen. Each worker is measured for his own individual uniforms. Several complete uniforms for each worker are bought and paid for by the laundry. The company doesn't invest a penny of its own money in these uniforms.

Soiled uniforms are picked up as the company desires, and clean ones left in their place. One or several changes can be made each week, as desired.

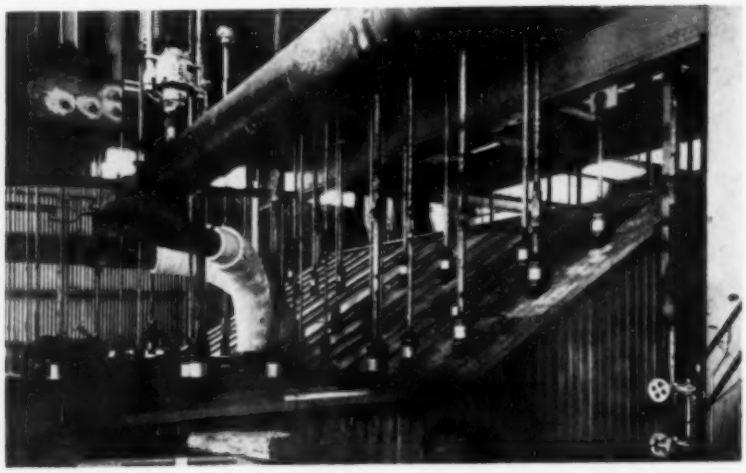
• Avoid Haphazard Selection •

NO MORE pig in a poke

CONSIDER:
Safety
Durability
Comfort
Appearance
Expense

Efficient and Attractive Overcoat for Florida Equipment

Equipment Insulation



A SMOOTH SURFACE skin casing covered by spun mineral wool block insulation with a channeled steel decking finish gives durability, economy and sleekness to the boilers at Florida Power Corporation's George E. Turner Plant, Enterprise, Florida. Equally efficient and practical is the aluminum lagging covering the insulation on all circular surfaces, such as downcomers, deaerators and stacks.

The Turner Plant provides 75,000 kw of new capacity for Florida Power Corporation to serve the booming industrial and residential expansion in North Florida. It increases the capacity of the Enterprise station by two-thirds — by adding a gas or oil fired, 600,000 pound-per-hour Riley boiler which uses a new type of furnace in which the firing centerline is directed 25 degrees downward from horizontal.

The sloped portions of the furnace cause indentations in the front and back boiler walls. Although the two layers of Mono-Block insulation follow this irregularity (as in Figure 2), the channeled steel lagging is sheer and straight (as in Figure 3) leaving dead air spaces between it and the insulation and its diamond mesh reinforcement.

A chief advantage of Riley's new Turbo Furnace design is that the secondary air for combustion can be directed around the flame at any angle to the firing centerline by adjustable louvers. Thus, the actual flame may be directed in any way from straight across the furnace horizontally to downward at a 45 degree angle, toward the floor of the furnace chamber. In this manner, rates of heat liberation and heat transfer can be adjusted without tampering with the fuel flow through the burner.

Another interesting aspect of the insulation job is that the interior boiler casing panels are studded on 6-in. centers with 9 ga retaining pins welded on at the factory before erection. These lie flat during shipment and then are bent out on the job and the insulation is impaled over them. Joints between layers of block are staggered, and half of the pins are turned over after the second layer of block is applied. The other half of the pins are used to secure the expanded metal lath which covers the final layer of block, holding it snugly to the skin casing.

The job called for three carloads of 2-in., 2½-in. and 3-in. thick block to cover 14,000 sq ft of boiler surface. The hotter zones are insulated with two layers combining to total 5-in. thickness, while other surfaces carry a 4½-in. combination.

All heavy channeled steel lagging is held by self-tapping screws to structural angles and beams (see Figures 2 and 3) previously welded in place. The lagging does not hang on the insulation or its retaining mesh.

The channeled decking lagging is 18 ga except on the roof where it is 12 ga. The heavier roof finish is designed to handle occasional foot traffic.

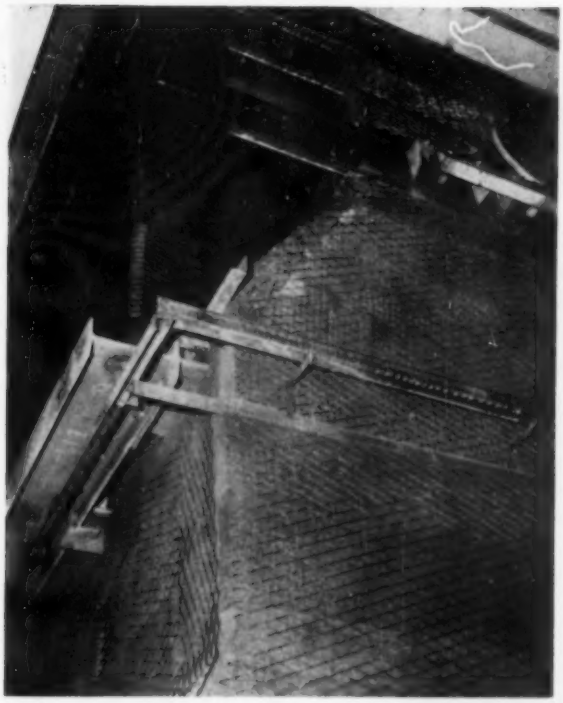
Windboxes, which angle out from the boiler at the bottom as shown in Figure 4, are coated with a ⅜-in. layer of Super Powerhouse insulating-finishing cement. Here, 1-in. wire mesh is secured over the insulation to reinforce the hard white-surfaced cement applied to the irregular surfaces.

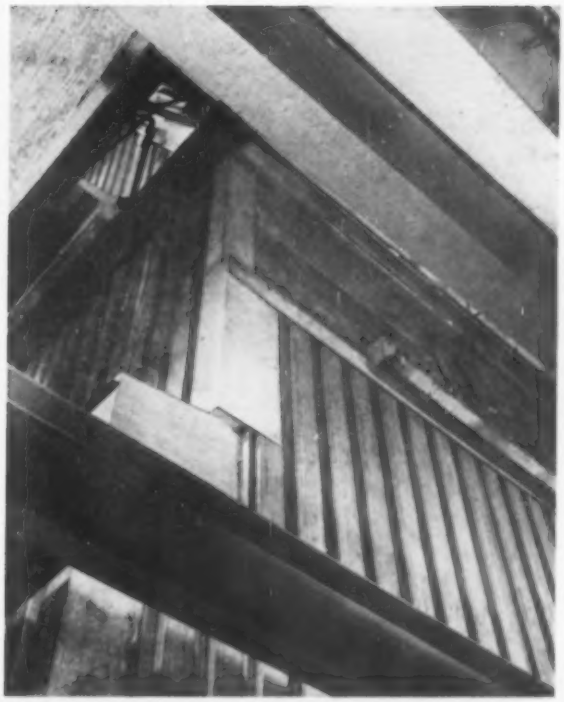
Another interesting detail is the mineral wool felt which is around the sleeves and bellows encasing the rods, on which the boiler hangs, where they emerge from the penthouse (Figure 1). In each case the sleeve or bellows was packed before its cap was welded on.

Auxiliary Equipment

Most cylindrical elements, such as the 18½-in. diameter downcomers, the 10-ft. 4-in. diameter horizontal deaerator shown in Figure 5, and the 6-ft diameter flues to the stacks, required only two inches of Mono-Block in a single layer, although others, the first stage of the super-heaters for example, required 3-in. applied in two layers. Accessory housings and ductwork, insulated by The Aber Company of Houston and New Orleans, called for 13,000 sq ft of block.

Insulation was applied conventionally. First the cylinder was encircled by temporary elastic bands of rope, rubber strips and extension springs. Then the block was mitered by a band saw to half the angle subtended by each block, and the blocks were fitted under the temporary elastic bands. Steel strapping provided permanent at-

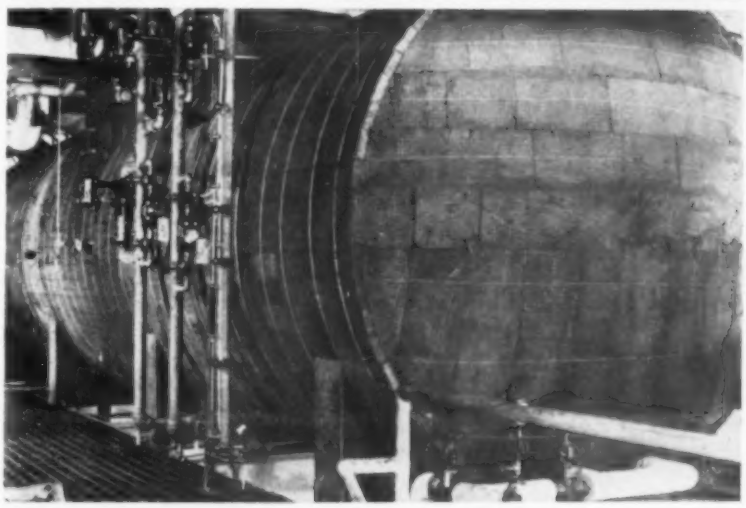




tachment, as shown in the finished photo of the deaerator (Figure 5). Sheet aluminum lagging with 1½-in. standing seams, covers the block course. The net result is neat and durable.

On flat surfaces, such as the dust collector hopper corner and preheater, Mono-Block is attached by tie wires either to ¼-in. pencil rods welded over the structural stiffeners and flanges, or to nuts and washers tack welded on edge on 9-in. centers. After the block was in place, galvanized steel (rather than aluminum) was used to cover it. Here again the sheets are joined with 1½-in. vertical standing seams.

According to Mr. A. J. Ormston, Chief Mechanical Engineer for Florida Power Corporation, "sturdy metal lagging and simplified surfaces (which we specified and which Riley and Aber installed) give us more than beauty and cleanliness. It saves dollars in maintenance and painting, and is so durable that we have had less repair than with other types of lagging used on older installations. The big factors in engineering economics are simplicity and speed of installation. Nor are we of Florida unaware of the public relations appeals.



Coal cuts fuel costs $5200 a year

Hinsdale High School uses just 1450 tons of coal a year, saves on fuel and handling costs

When Hinsdale Township High School, Hinsdale, Ill., was designed, an engineering survey on the cost of steam generation was conducted simultaneously. (Steam would be used principally for heat, hot water, swimming pool and laundry.) The survey dictated the selection of coal for lowest fuel costs and a completely modern coal-fired plant was designed for maximum efficiency and economy. Today, outstanding features of this coal burning plant are: one-man operation, economy in labor and fuel, mechanical coal and ash handling and low maintenance costs. The decision to use coal saves this relatively small coal-burning plant $5200 in fuel costs annually over the nearest competitive fuel.

COAL IS LOWEST COST FUEL

Today, *when the annual cost of fuel often equals the original cost of the boilers,* you should know that bituminous coal is the lowest cost fuel in most industrial areas. And modern coal-burning equipment gives you 15% to 50% more steam per dollar, while automatic operation trims labor costs and eliminates smoke problems. What's more, tremendous coal reserves and mechanized mining procedures assure you a constantly plentiful supply of coal at stable prices.

CONSULT AN ENGINEERING FIRM

If you are remodeling or building new heating or power facilities, it will pay you to consult a qualified engineering firm. Such concerns —familiar with the latest in fuel costs and equipment—can effect great savings for you with the efficiency and economy of coal.

TECHNICAL ADVISORY SERVICE

To help you with fuel problems, the Bituminous Coal Institute offers a free technical advisory service. We welcome the opportunity to work with you, your consulting engineers and architects. If you are concerned with steam costs, write to address below or send coupon. Ask also for case histories booklet, complete with data sheets. You'll find them informative.

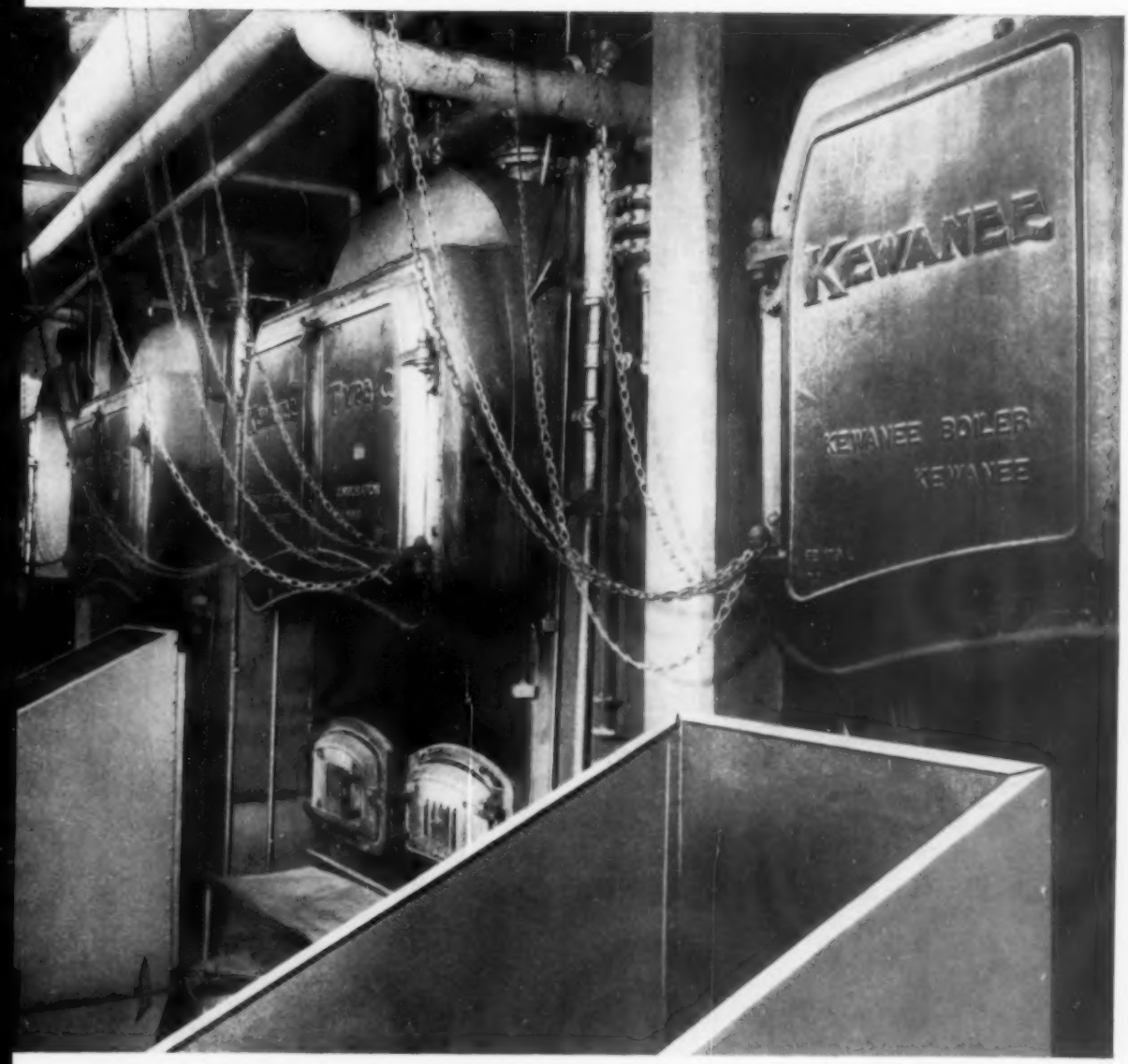
BITUMINOUS COAL INSTITUTE

Department SP-03, Southern Building, Washington 5, D. C.

See our listing in Sweet's Files: A-30J/Bi; PE-4a/Bi; IC-18/Bi

Three boilers in foreground are Kewanee Type C firebox units, rated at 20,000 sq. ft. radiation, fired by Iron Fireman single-retort stokers, with 1000 lb/hr coal feeding capacity. At rear is Fitzgibbons Type D firebox unit rated at 29,000 sq. ft. fired by Iron Fireman stoker, 1200 lb/hr capacity.

Exterior view of power plant. Coal is gravity fed from trucks through manholes into 600-ton storage bin. It is then moved by Hager screw conveyor to stokers. Ashes move from ash room by Webster bucket conveyor to chute (on right) for disposal.



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Electronics Maintenance

Oscilloscopes and Old Age

A SYMPTOM of old age in an oscilloscope may appear as a loss of horizontal linearity. In other words, if a steady signal of a frequency several times the horizontal sweep frequency is displayed, the display will appear spread apart on the left side of the screen and crowded together on the right side. This characteristic is most noticeable when the "fine" horizontal frequency control is at the low frequency end of its range.

In Fig. 1 is shown the basic circuit of the sawtooth generator found in most scopes. The sawtooth output of this circuit, amplified, serves to sweep the electron beam across the face of the cathode ray tube horizontally. Referring to Fig. 1, if a voltage E_{bb} were applied as shown, the capacitor C_1 would charge up according to the time constant of the circuit R_1, R_2,C_1. When the voltage across C_1 reached the breakdown voltage of the gas-filled tube V_1, the tube would conduct, allowing C_1 to discharge almost immediately to the cut-off voltage of the tube. The cycle would then repeat.

This action is shown graphically in Fig. 2 where curve OBC is the natural charging curve of the C_1, R_1, R_2, circuit. When C_1 reaches E_1, the tube V_1 fires until the voltage falls to E_2, the cut-off voltage. The cycle then repeats.

Since the charging time is dependent on the value of R and C, it can be seen that the frequency of the circuit could be varied by varying either R or C. In fact that is exactly what is done in most oscilloscopes to vary the horizontal sweep rate. Capacitance C_1 is changed by means of a selector switch usually designated as "coarse frequency control." Resistance is varied by means of a rheostat and is called "Fine Frequency Control."

It may be seen in Fig. 2 that the circuit operates on only a portion of the OBC charging curve. If this portion is kept small and well down on the curve, the sawtooth produced will be, for practical purposes, linear and which, after amplification, produces a linear sweep.

All the above assumes capacitor C_1 to be perfect and voltage E_{bb} normal. Let us now consider the case of the leaky capacitor. Let the leak be represented by the resistor R_3 shown in Fig. 1 connected by dotted lines in parallel with capacitor C_1.

Now, at no matter what portion of the cycle, there will be current through and voltage across R_1 and R_2. The drop across R_2 lowers the effective E_{bb} voltage. The drop across R_1 forces V_1 to operate on a higher portion of the curve OBC. The result of all this is that the circuit is now working on a more curved portion of OBC and the sweep is less linear. This is shown graphically in Fig. 3.

In checking your own scope you may find the nonlinearity worse on some positions of the coarse frequency control than on others. If this is the case, don't be tempted to replace only the bad capacitor. Buy the best quality you can find and replace the complete set. The emphasis on quality should not be taken lightly because a very small leakage can cause trouble. Don't be disappointed if you are unable to measure the leakage on the old ones. The reason for recommending replacement of the entire set is that on some scopes some disassembly is necessary to get at this section and you likely won't want to make more than one trip. — Certainly you can do it.

By W. A. KELLY, Electronics Technician, Southwestern Public Service Co., Amarillo, Texas

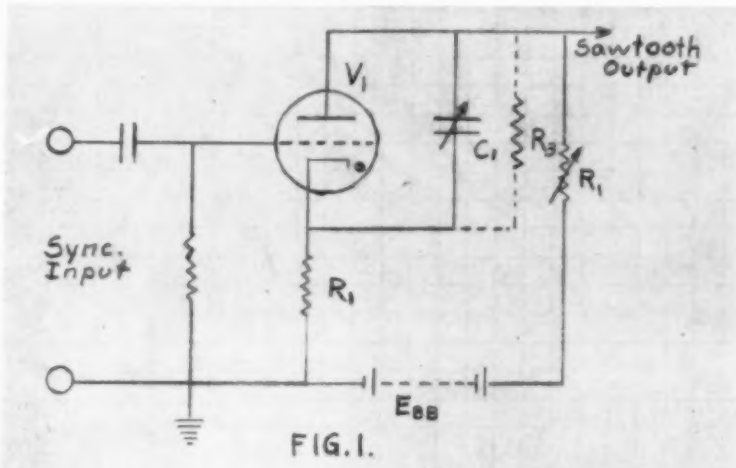


FIG. 1.

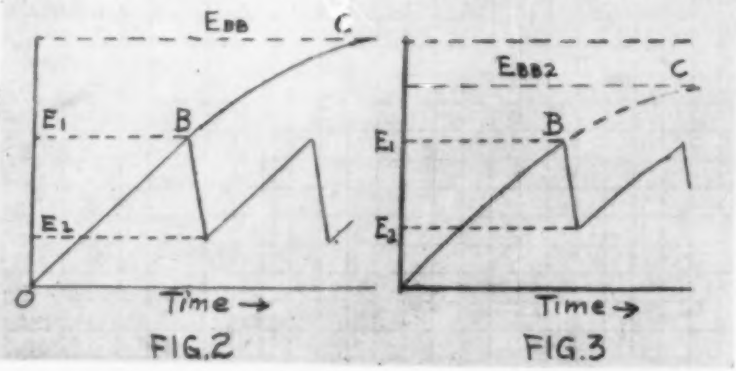
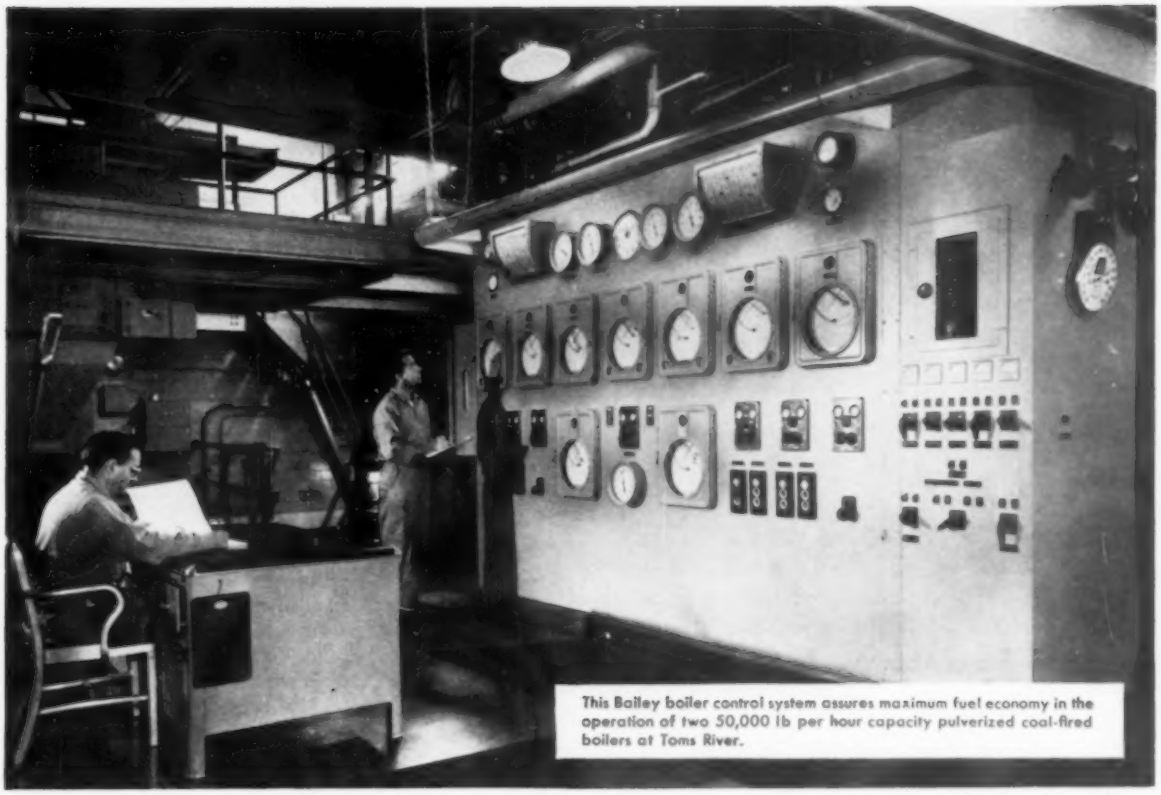


FIG. 2 FIG. 3



This Bailey boiler control system assures maximum fuel economy in the operation of two 50,000 lb per hour capacity pulverized coal-fired boilers at Toms River.

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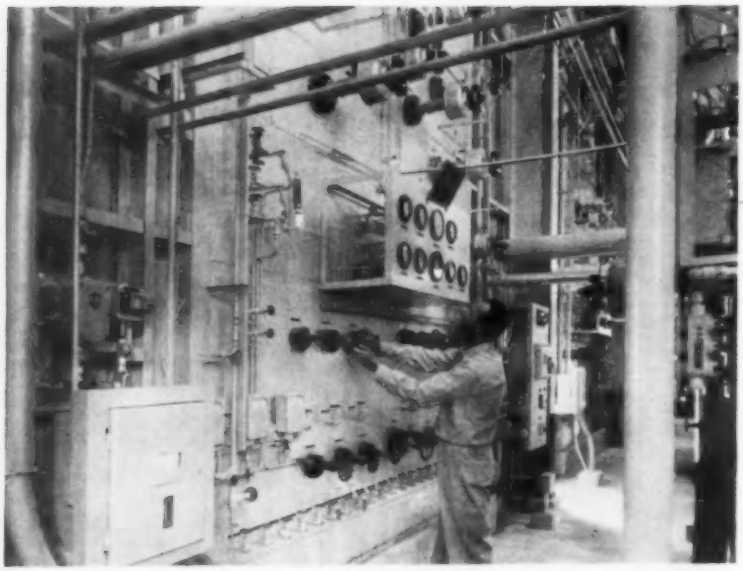

This rear section of a crude helium cold box contains defrost controls and a local-mounted gauge panel. Above the panel are some of the 42 automatic controls that regulate pressure and flow.

New Oklahoma Plant Doubles Country's Helium Capacity

AMERICA'S capacity to recover precious helium from its supply of natural gas has been doubled. In a demonstration of the way Government and Industry can work quickly and efficiently together, the new Bureau of Mines giant helium extraction plant at Keyes, Oklahoma was put on stream in less than nine months after the contract for its manufacture and erection was signed.

Fluor Corporation, Ltd., built the complete facility under prime contract with the U. S. Bureau of Mines. Air Products, Inc. supplied the key low-temperature process equipment for the recovery of crude helium from natural gas feed.

The Keyes facility is now the free world's largest helium producer. It processes 70 million cubic feet of natural gas daily, recovering at least 92% of the helium in the feed. This amounts to an average monthly helium production of 30 million cubic feet, which is approximately equal to the combined output from all the other existing helium plants in the U. S.

The heart of a helium recovery plant is the low temperature crude extraction equipment. At Keyes, this equipment removes helium at 90% purity from the natural gas stream on its way to fuel markets. Extraction is accomplished by cooling the feed gas with liquid nitrogen to approximately —300 F, at which temperature most other components in the stream are liquefied and separated from the helium.

Each of three units at Keyes processes over 23 million cubic feet of natural gas daily by cooling the gas in specially designed heat exchangers, and utilizes high speed turbo expanders to supply refrigeration for the process. 90% pure helium product from the units is then delivered to the final purification section of the plant.

Helium content in natural gas ranges up to 8% in a few fields but most large natural gas fields in the U. S. contain less than 1.0%. The Keyes, Oklahoma field was selected by the Bureau of Mines for its new plant for several reasons. At Keyes, the helium content is a rich 2%. The field has a large supply of helium-rich natural gas commercially available and is close to Amarillo, Texas, central control point for production and shipment of all helium gas in the U. S.

The completion of the Keyes plant marks a significant step forward in the extraction of helium for commercial and government use. Although America has the richest known helium deposits in the free world, most of which are in Kansas, Oklahoma, and Texas, the fiscal-1959 production of this valuable gas was only about 76% of demand.

Prior to World War I, scientists saw no practical use for helium, but since that time its use for lighter-than-air craft and its more recent strategic importance in missile development and testing and atomic energy work has caused demand to mushroom.

NACE Conference — Dallas

More than 94 technical papers covering a wide variety of corrosion subjects will be presented at the **16th Annual Conference of National Association of Corrosion Engineers,** March 14-18, 1960, **Dallas.** The 1960 Corrosion Show will be held concurrently.

Atomic plant, missile industry corrosion and general industrial corrosion problems are among the subjects of the 18 symposia. Discussions on the theoretical and laboratory investigations of corrosion principles also will be covered. About 135 authors and co-authors will present papers.

In addition to hearing technical papers, corrosion engineers will meet in about 60 technical committees to exchange information and to hear reports of work done by fellow corrosion scientists.

NACE governing and executive bodies will meet during the conference to plan the future of the society. New officers will be installed on the last day of the conference.

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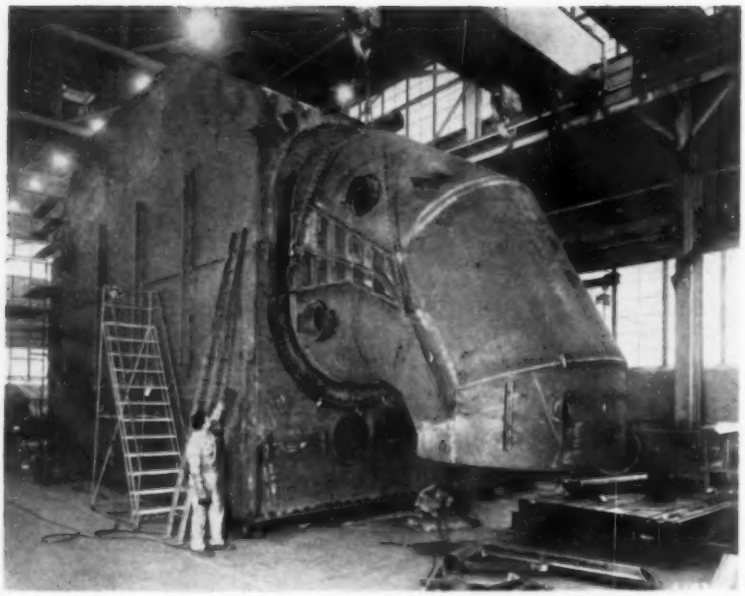


110,000 sq ft surface condenser was recently shipped to Louisiana Power and Light Company by American - Standard Industrial Division.

Condenser for New Louisiana Plant

A 110,000 SQ FT surface condenser was recently delivered to Louisiana Power and Light Co., according to an announcement from American-Standard Industrial Division.

The new condenser is for installation at the Little Gypsy Steam Electric Station, 35 miles north of New Orleans. This is planned to be the first fully automatic power station. The unit is designed to condense 1,410,000 lb of steam per hr with a back pressure of 2.65 in. of Mercury absolute.

The new condenser design is based on a special modular construction that greatly reduces erection time at the power station site. It was completely fabricated and aligned into shell components at the American-Standard Industrial Division plant in Buffalo, N. Y., prior to shipping. Ordinarily, condensers of this size and type are erected at the power station from individual parts that are merely pre-machined and preformed by the condenser manufacturer.

The new condenser should be erected in approximately 1/3 the time normally required. Major modular units include four water boxes, the steam inlet plenum, and the shell chamber which is divided into four sections. It required six railroad flatcars to ship these major condenser components to the erection site.

Another feature of the condenser is a new type of water box. Its design is based on a volute shape to reduce both turbulance and pumping power to the condenser. It is expected to reduce pumping load by 45 hp. The new water box design will distribute the water more uniformly over the entire tube sheet, thereby assuring constant water velocity over all levels of the tube bank.

Two feedwater heaters in the condenser inlet plenum and two sets of coolers in the condenser hot well are also important design features in the new condenser. These lower the overall initial cost of the condenser system and also provide easier accessibility for maintenance.

Radio Rig for Insulation Tests

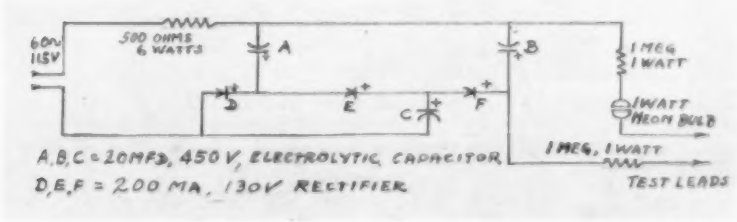
A FEW RADIO components housed in a 4-in. box, or mounted on the wall of the shop, provide 500 volts d-c for testing insulation.

The rig uses half wave rectifiers for voltage tripling, giving about 500 volts d-c on open circuit as below, using Federal 200 ma, 130 volt rectifier stack.

We use this device feeding one side of a 2-circuit receptacle, the other a series resistor for bench test leads. The small components may be placed inside a box with a combination duplex receptacle and pilot light cover. Make sure of the proper polarity of the electrolytic condensers.

The resistors in the test leads add safety to the user by isolating them from the electric supply.

By HARRY J. MILLER
Sarasota, Florida



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Nuclear Progress in the New Decade

By JOHN F. LEE

SPI Consultant on Atomics
Broughton Professor and
Head of Mechanical Engineering Dept.
North Carolina State College

THE ATOMIC INDUSTRY closed out 1959 and looked ahead to the next decade encouraged by evidence of increasing willingness of reactor manufacturers to offer qualified guarantees of nuclear power costs, by a ten year U. S. Atomic Energy Commission plan for attainment of economic nuclear power and by continuing progress in construction and operation of actual nuclear power projects and programs, according to a year-end summary issued by the Atomic Industrial Forum, the association of the nuclear industry.

Dampening factors for certain segments of the industry include a slow-down in the Euratom nuclear construction program, cutbacks in certain U. S. government reactor development programs, over-production of uranium, and a more conservative appraisal of the current value to industry from utilization of radiation and radioisotopes.

In its summary, the Forum noted that several major reactor system suppliers are indicating cost guarantees on nuclear power plant construction factors over which the manufacturer could maintain control. The year 1959 also saw the Atomic Energy Commission announce details of technical studies upon which it is basing a ten-year government plan for nuclear power development programs to be carried out both at government facilities and at private sites.

Atomic Energy Commission estimates showed that at least one system, pressurized water, could be developed to the point of being nearly competitive with conventionally-fueled plants by 1965. Other positive highlights of the past year included: startup of the privately-financed Dresden (Illinois) nuclear power station, the world's largest operating power reactor; launching of the N. S. Savannah, the world's first nuclear-powered commercial cargo or passenger-carrying vessel; addition of five more atom-powered submarines to the nuclear Navy; and sea trials of the Soviet Union's atom - powered icebreaker, the Lenin.

The Forum review, on the other hand, indicated little encouragement to American hopes for an expanded nuclear equipment market as a result of the Euratom program, with only one of five European reactor construction proposals meeting deadline requirements of the Euratom invitation, that one being the SENN plant in Italy which will be financed in part by the World Bank under arrangements initiated more than two years ago.

Applications of radiation received a setback with deferment of Army plans to operate an ionizing radiation center for radiation sterilization of food. Relatedly, an AEC-sponsored survey revealed that the total net savings realized by major industries from using radioisotopes amounted to just under $40 million annually. This was approximately one-tenth of the Atomic Energy Commission's 1957 estimate and resulted primarily from a re-definition of what constituted actual savings to industry.

The report did state on a more positive note that returns on isotope and radiation investment are very high in many instances, although only a small percentage of American industrial companies are availing themselves of the opportunities for cost savings and profit increases that radioisotopes offer.

Competitive Nuclear Power

Progress in the design of atomic power plants of a proven type now has reached the point where it is possible to guarantee plant cost, capacity and fuel consumption, according to Gwilym A. Price, chairman of the board of directors, Westinghouse Electric Corporation. "We at Westinghouse have always been reluctant to predict when atomic plants will compete commercially with conventional facilities," he pointed out.

"Today, however, we are willing to go on record as believing that this time is just about here now . . . large nuclear power plants of a proven type can now be built which will produce electricity in some high fossil fuel cost areas at a cost competitive with conventional plants. It is now possible to guarantee the cost of these plants, their capacity and the amount of fuel they will consume."

The Westinghouse board chairman explained that American industry needs practical operating experience with the most promising types of atomic power plants to get over the threshold of atomic technology. What our industry needs today is the tempered cut and thrust of experience — experience in depth and in variety. In some cases, we need to build prototype plants to demonstrate feasibility.

"The more proven reactor types require successive generations of full - scale plants. Shippingport alone, for example, cannot tell us all we need to know about closed-cycle water reactors. We need to develop successively larger nuclear plants. Finally, we need the experience that can come only from operating such plants over a period of years."

Despite substantial atomic achievements and the fact that America holds world leadership in atomic technology, we stand today only at the threshold of this new

art. In relationship to the future, we stand where we stood in the early years of the electrical industry. The opportunities in our hands are as great as those seized by the pioneers of our industry and developed by half-century or more of the world's best engineering.

One magnificent overriding fact stands out. We are working with one of the greatest discoveries of this or any other age. We can take power from matter itself and use it productively for the benefit of all the world. In looking back at developments that have led this nation to its enviable place in the atomic power field, we have come farther and faster than most Americans realize. It was less than 11 years ago that the newly formed Atomic Energy Commission contracted with a private company to build the first naval reactor, Mr. Price continued.

Today, the United States is well started toward conversion to a nuclear fleet. It has authorized the construction of 33 atomic submarines and three surface vessels. Twelve of these have been launched. Six submarines are in service and have broken all the records. In all, 46 reactor plants have been or are being built for naval propulsion.

Our country's leadership in atomic naval propulsion is due largely to two main factors. The nation began its program early, and it pursued that program on a steady, continuing basis. It was not a crash program, but rather a sustained, stable program of research, design, development and construction . . . The Navy and the Atomic Energy Commission conducted a program which did not blow out of shape with every gust of wind from the Kremlin.

In the electric utility field, the Atomic Energy Commission, the electrical industry, including utilities and manufacturers, are well into a program of attaining economic atomic power. Three plants are operating and six others are under construction, with many others in various stages of planning, research, development, or study. The Westinghouse chairman said the advances in this country are superior to the atomic program

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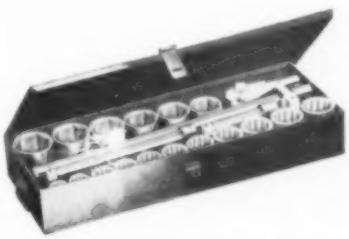

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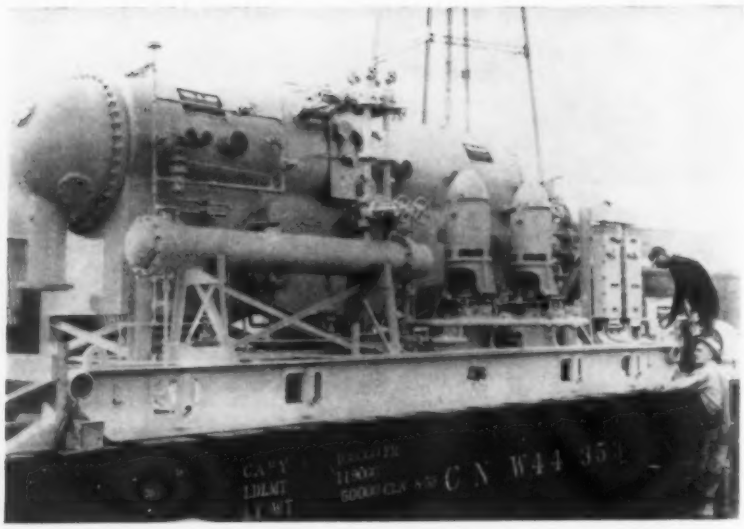

THIS CONDENSER, which weighs only 29,100 lb, was built to meet a 15 ton weight limitation for future air transport to a remote Arctic location. The unit will be installed in tunnels located deep beneath the Arctic snow, and will be a part of an Army Nuclear Power Plant constructed for the Army Engineers' Eastern Ocean District. Because of the weight consideration, the condenser has aluminum tubes and is the first unit produced by Worthington that is so equipped.

Extreme low temperatures in the Arctic regions will necessitate the use of special condenser fluid. An Ethylene-glycol water mixture, which will not freeze until its temperature reaches —55 F, will be used in place of the usual water. This skid-mounted Nuclear Power Plant is uniquely designed so that it is portable and can be relocated at specified times.

in Russia, where, according to American industrialists who toured the Soviet Union last summer, "none of the large atomic stations visited was more than 15 per cent finished, and none could become critical under 18 months' time."

Space Symposium in Florida

The First Symposium of its kind concerned with Space Trajectory Determinations, was held on December 14 and 15 at the Langford Hotel in Orlando, Florida. The nation's leading specialists in this fast-growing field — one of vital importance to our military and scientific space programs, met for the two-day conference. The Symposium was under the auspices of the Advanced Research Projects Agency (ARPA) and the American Astronautical Society. The program's host was the Research Division of Radiation Incorporated, under the Chairmanship of Dr. T. C. Helvey of the Research Division.

The Symposium was organized to fill the need for a "state-of-the-art" survey. In addition to this survey and exchange of ideas among the scientists participating, the entire Symposium will be published in book form to serve as the most up-to-date reference on a science that virtually has no textbooks at present. Dr. Helvey is editor of this forthcoming volume, first in a series on advanced space subjects. The Research Division of Radiation Incorporated plans to hold "state-of-art" Symposia each year. The published series will be direct result of these yearly efforts.

This year's Symposium speakers were: Kraft Ehricke, Director, Centaur-Vega Project, Convair; Dr. C. A. Whitney, Smithsonian Astrophysical Observatory; G. B. Westrom, Astrodynamics Group, Aeronautronics; A. Shef, Chief, Space Technology Branch, ARPA; Dr. R. Baker, Ass't. Prof. Astronomy, University of California; Dr. J. Ward, Chief, Digital Computer Branch, AFMDC; A. Tanguay and Dr. D. Hock, Research Division, Radiation Incorporated; Dr. F. Conte, Manager, Mathematical Analysis Dept. Space Technology Labs; C. King, Head of the Computer and Guidance Section, Space Technology Labs; Prof. R. Hermann, Dept. Aero Engineer, University of Minnesota.

The broad range of topics included: Fundamental Astronautical Constants and Units; Military Space; Astromechanics; Trajectory Computation and Optimization; Space Maneuvers; and Ascent and Re-entry.

Due to the scattering of information in this highly specialized field of Space Trajectory Determination, many scientists in related subjects such as Astronautics, Astromechanics and Space Vehicle Manufacturing have felt the need for a central source of information and reference. Space Trajectories, with their corresponding environmental factors, become crucial determining variables in mechanical and human engineering, which are integral phases of military and scientific space programs.

Precipitators for New Baltimore Station

A battery of electrostatic precipitators, built in the Baltimore shops of the **Koppers Company's Metal Products Division**, will guard against air pollution at the **Baltimore Gas and Electric Company's** new Charles P. Crane Station, now under construction on the shores of the Chesapeake Bay some nine miles east of Baltimore.

Each of the precipitators for the initial installation at Charles P. Crane Station will be approximately 25 feet wide, 18 feet deep and 27 feet high. Each has been designed to handle 152,000 cubic feet per minute of dust-laden gas from a coal-fired cyclone boiler rated to produce 1,360,000 pounds of steam per hour. With this method of firing, 80 to 85 per cent of the total ash is removed in the form of slag. The precipitators are designed to remove 95 per cent of the remaining fly ash from the gas stream.

Plant Rail Crossings

ONE DOES NOT realize the number of times a day a vehicle crosses a railroad siding in his own plant yard. He can, however, get a quick estimate by taking a plant site plan and studying it in connection with daily movement of trucks. Small plants have only one or two single crossings but larger plants have as many as three or more parallel sidings together. For example, only consider the full routing of your refuse pickup truck for one day to find out why truck maintenance is higher than expected.

Try now to visualize what condition these various crossings might be in. It might be as much as five years since any repairs have been considered. If your present roadways are old macadam, they no doubt will have developed ridges along the rails created by the yard switcher. If the roads are dirt or gravel, you can bet rainy weather has helped develop chuckholes created by your trucks.

Our crossings were this bad and then some. Why the fenders have not fallen off all the trucks long ago is a wonder.

There is something you can do, and that is to consider the placing of precast roadway slabs to form an approach and fill-in between rails on your much neglected crossings.

These can be made in forms created by your own ingenuity, or the slabs can be purchased from a reputable concrete casting plant specializing in the casting of the new precast bridge beams incorporated on new style overhead highway crossings.

It might be necessary to make a few special shapes to fit switches and crossovers. Most highway and main line crossings need deeper and heavier slab sections because of the heavier rail sections, but most sidings in plant sites have the old discarded mainline rails which aren't as high.

Try slabs on one crossing to see if the drivers won't appreciate your efforts. And the garage people might be able to keep your trucks in better condition and reduce your truck maintenance costs.

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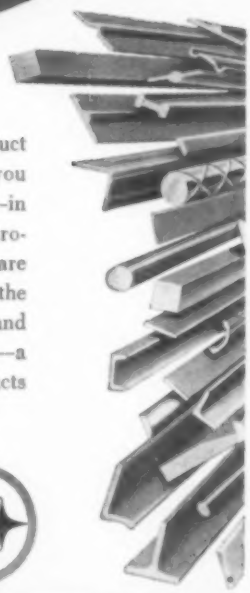

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1—Scale Remover — Bulletin shows how Anco Scale Remover quickly eliminates scale in boilers, water lines, refrigeration and air conditioning systems—ANDERSON CHEMICAL COMPANY.

17—Mechanical Packings — 32 p Cat. PC-103 describes a variety of packings & gaskets, including self-lubricating, sheet and molded packings, etc. Includes application charts and price information. — GREENE, TWEED & CO.

18—Maintenance Ideas — 4-page folder highlights 90 ways Kano Kroil and other products can help the man-in-the-plant. — KANO LABORATORIES.

31 — Stack Maintenance — How wrought iron offers unique defense against flue gas corrosion described in bulletin "Wrought Iron for Flue Gas Conductors." — A. M. BYERS COMPANY.

45—Correct Lubrication — "Lubriplate Data Book" shows importance of providing and maintaining proper and economical maintenance of all types of plant machinery through adequate lubrication. — FISKE BROTHERS REFINING CO.

53—Steam Line Treatment — Folder describes alkaline IPCO S-L-T. Used in boiler water, it will volatilize and travel with steam to return lines. Prevents costly repairs and provides insurance against replacing pipe and fittings. — IPCO LABORATORIES, INC.

58—Tube Expander Drives — Bulletin 581 gives data on complete line of Torq-Air-Matic automatic tube expander drives and explains the importance of precision control in tube expanding. Chart to aid selecting right model for the right job. — THOMAS C. WILSON, INC.

64—Anti-Corrosive Paints — Bulletin "The Application of Subox and Subalox Paints" — Gives the story of a complete paint system for weather, moisture and alkali protection, with details as to application. — SUBOX, INC.

70—Multi-Purpose Grease — Bulletins describe new single product Gulfcrown grease (4 consistencies) that does the work of many — simplifies application and avoids errors, reduces inventory and cuts lubrication costs; grease gun or centralized system application — GULF OIL CORPORATION.

78—Control Heat & Glare — New folder tells how Sun-X Glass Tinting (transparent alkyd - based liquid plastic by duPont) is applied directly to existing glass by flow process without spray or splatter. Bonds tightly. Wash in usual manner. — AMERICAN GLASS TINTING CORP.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

107—Proportioning Pumps—4 p brochure illustrates and describes company's proportioning pumps and package chemical feeding units. Includes applications and specifications. — THE BIRD-ARCHER CO.

120—Continuous Blow-Off Equipment. — Publication No. 5700 shows how equipment can effect substantial savings in heat and fuel by returning the heat contained in the blow-off. System also maintains uniform dissolved solids concentration in boiler. Typical applications and lists of users are included. — COCHRANE CORPORATION.

123—Slurry Pump — Catalog describes the new SP-90 slurry pump which permits proportion of slurries in the mix tank to remain constant, with pumping rates variable from maximum to 1/5 of maximum. — MANZEL.

132—Glassed Centrifugal Pumps — 12 page Bulletin 725.2 describes line of glassed pumps for handling corrosive acids and alkalies. Every part of pump exposed to liquid has a tough glass surface. Specification, ratings, dimensions. — GOULDS PUMPS, INC.

135—Heat Exchanger — Bulletin 132 shows how sectional Aero unit gives close temperature control, saves labor, power, and water; design improves heat transfer to outdoor air by evaporation; 7,000,000 to 18,000,000 Btu/hr capacity range. —NIAGARA BLOWER COMPANY.

160—Boiler Feed Pumps—12 p Bulletin 122 describes and illustrates the type BFI high pressure pumps. Design features, service ratings and engineering data included. — PACIFIC PUMPS, INC.

169—Airfoil Fans — Bulletin No. 179 covers complete line of Airfoil mechanical draft fans for forced and induced draft featuring wide range of pressure-volume ratios, high efficiency, low noise level, rugged construction.—GREEN FUEL ECONOMIZER CO.

189—Air Traps — Bulletin 289 describes ball float traps for draining water from air, gas or steam lines, or for draining light liquids from gas under pressure. Physical and selection data, prices, etc. — ARMSTRONG MACHINE WORKS.

INSTRUMENTS—METERS CONTROLS—REGULATORS

201—Valves & Gages—Handy guide No. 36 gives data and prices on valves, liquid-level gage and accessories for process and power industries. — PENBERTHY MFG. CO.

205—Draft Gages — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters. — ELLISON DRAFT GAGE CO.

206—Process "Indicator" — Catl. 100 B shows how you can have maximum info on all process variables with Panalarm annunciators. Trouble anywhere is signalled instantly — before it can grow big and expensive. — PANELLIT, INC.

213—Meters & Controls — Bulletin G15-1 describes and illustrates systems and instruments used in the measuring, transmitting, receiving, interpreting and controlling of 18 variables normally encountered in power plant and industrial plant operation.—BAILEY METER COMPANY.

222—Pressure Regulators — Catalog No. 77 illustrates and describes application, operation and specifications for a complete line of reducing, back-pressure and pump-pressure regulators.—MASON-NEILAN.

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Bulletins (Cont.)

224—Feedwater Regulator—Bulletin 1044 describes the BI Feedwater Regulator, the single-element unit employing a thermostatic-tube level controller which actuates a regulating valve in feed line. For loads from 10 to 785 psig. Includes specifications table and schematic diagram. — COPES-VULCAN DIV.

235—Liquid Levels — Bulletin 532 describes indicator which gives a reliable, automatic reading of storage tank contents. 20" dial in 3 x 10" case saves panel space. No outside power source needed; can be located up to 250 ft from tank. — THE LIQUIDOMETER CORP.

238—Auxiliary Alarm on Remote Gages — Bulletin C6 — Eye-Hye Remote Reading Gage with electrode and relay adaptation actuates auxiliary audible or visible signals at high or low water levels. — RELIANCE GAUGE COLUMN CO.

267—Remote Liquid Level Indicator — How clear, brilliant readings from any angle are possible with this unit is explained in Bulletin WG-1824. Pointer is always visible, even at extreme high and low water levels. Of manometric type with automatic temperature compensation. — YARNALL-WARING COMPANY.

281—Control Valve — 8 p Bul. J-170 describes sliding gate and plate control valves available. Includes engineering data, cutaway drawings, features, application information, dimensional drawings, flow capacities, rating charts, flow curve and sample specifiations. — OPW-JORDAN.

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

300—Fact Folders — 23 up-to-date industrial fact-file folders on aluminum, steel, copper, stainless steel, insulation, roofing and other industrial supplies immediately available from 9 Southern warehouses. — REYNOLDS ALUMINUM SUPPLY CO.

303—Stacks & Breechings — Form 75 describes monolithic linings for full protection of stacks and breechings, utilizing castable refractories. Typical installations illustrated and described. — PLIBRICO CO.

304—Backing Rings — Bulletin 56-2 describes rings designed for fast economical fit-up in piping, tubing, fittings and valves. Shows how rings assure uniform complete-penetration welds and ease of handling in both shop and field. Carbon steel, wrought iron, chrome alloys, stainless, aluminum and copper.—ROBVON BACKING RING COMPANY.

310—Incinerator — Metal cased, insulated, refractory lined incinerators for industrial and commercial use. City smoke code approved. Fast, economical installation — any size and capacity. — NORTH STATE PYROPHYLLITE CO.

315—Pressure Vessels — Catalog 100 discusses your plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

322—Heat Transfer Cements—Engineering Data Book 502 includes calulations, estimating and installation procedures on properties and uses of Thermon heat transfer cements. Contains complete list of Southern engineering representatives. — THERMON MANUFACTURING COMPANY.

323—Mercury Vapor Fixture — Industrial color corrected units described in Bulletin 401. "Stabilux Socket" secures bulb end of lamp, eliminating lamp rupture and breakage from vibration. — WIDE-LITE CORP.

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324—Painting New Plants — "Plan Painting of New Plants to Reduce Costs" describes how company's lead-suboxide paints can save 1 or 2 coats of paint on new plants. Eventual repainting costs are cut as well since these paints form a dense, metallic lead film which can be recoated without expensive scraping, sanding or repriming. — SUBOX INC.

335—Classifying Systems — Bulletin explains general operating characteristics of centrifugal and gravitational type classifiers. Curves illustrate high efficiencies achieved in actual installations and indicate particle size distribution of incoming feed, separated fines and coarse material. — BUELL ENGINEERING CO., INC.

342—Power Roof Ventilators — Bulletin 550 describes V-belt driven centrifugal type power roof ventilators. Pressures to 2" SP; capacities from 1500 to 26,500 cfm.—CLARAGE FAN CO.

348—Building Drainage — 64 p bulletin describes the advantages of 4-D wrought iron for soil, waste, vent and downspout piping. Includes sections on corrosive conditions, comparative service, costs. Durham systems, and photographic surveys on vent corrosion. — A. M. BYERS CO.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexiblity of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

401—Steam Traps — Bulletin 775 gives price, dimension and capacity data on Open Float and Thermostatic Steam Traps for trouble-free heating service.—ARMSTRONG MACHINE WORKS.

402—Forged Steel Valves — General Purpose Valves, Supplement No. 1 to Catalog F-9, covers gate, globe and angle valves, ½" through 2" sizes, for 150-800 pound service. Featuring 13% chrome stainless steel trim with hard facings. — HENRY VOGT MACHINE CO.

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

405—Temperature Problems — 4 p folder "Service for Efficient Thermal Conservation" covers insulation solutions for high and intermediate temperatures, heating & air conditioning-low pressure steam, and ice water and frigid temperatures. — MUNDET CORK CORPORATION.

409—Lubricated Plug Valves—Catalog PV-4 covers operational features. Quarter-turn to open or close; lubricant grooves provide positive seal when valve is closed; when open, seating surfaces not exposed. —THE WM. POWELL COMPANY.

416—Control Valves — Illustrated Cat. 305 contains detailed specifications on air-operated control valves. All usual types are described. Technical data are included as an aid to selection. — MASONNEILAN DIV.

429—Expansion Joints — 8 p Bulletin EJ-1915 describes Type W Gun-Pakt expansion joint which features an improved one-piece design of body and gland. Includes data on figuring expansion of pipe lines and suggestions for installing expansion joints. — YARNALL-WARING CO.

442—Sewer Pipe — Folder SF-14056 describes how Smooth-Flo Sewer pipe provides top flow capacity and strength of corrugated metal. Flexible design, strong joints, and centrifugally-spun asphalt lining. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

443—PVC Fittings & Flanges—Corrosion resistant polyvinyl chloride pipe fittings & flanges covered in 12 p catalog, featuring characteristics, advantages, limitations, operating pressures, temperatures, field tests, etc.—GRINNELL COMPANY, INC.

448—Steam Trap Troubles—Booklet for plant engineering personnel "Banish Your Steam Trap Troubles." —YARNALL-WARING COMPANY.

466—Pipe Insulation — Folder describes Superglas with "hinged action" — made in one-piece, full length sections open easily to speed installation; easy cutting and fitting; temperature limit is 350 F. — MUNDET CORK CORPORATION.

468—Steam Traps — 40 p engineering manual aids engineers and maintenance men in sizing, specifying and buying of steam traps and other fluid specialties. All data necessary to engineer a trap installation is included. — V. D. ANDERSON CO.

BOILERS—STOKERS TURBINES—BURNERS

501—Package Boiler—New compact low cost package unit (oil or gas fired) for small space requirements is described in Bulletin DK-1. Pressures to 325 psi, steam capacities to 45,000 lb/hr. — E. KEELER CO.

502—Feedwater Treatment — Catalog tells how Braxon internal treatment conditions water so as to remove and prevent scale formation and corrosion in boilers. — ANDERSON CHEMICAL COMPANY.

504—Steam Generators — Bulletin AXY - 1 describes auxiliary equipment and design features of the Amesteam Generator for sizes 10 through 600 hp and illustrates how this integrated design reduces cost and increases life and reliability. — AMES IRON WORKS, INC.

505—Refractories — Paco High Heat Duty and Super Duty Plastic Refractories. Fire brick, high temperature cement, castables. Installation and engineering service. Free estimates and inspection. — NORTH STATE PYROPHYLLITE CO.

506—Package Boilers — Practical construction with Continental two pass design described in Bulletin BE100. Units range in size from 20 to 600 hp; 15 to 250 pressures burning oil, gas or combination. — BOILER ENGINEERING & SUPPLY.

510—Vibra-Grate Stoker — Water-cooled vibrating grate stoker in sizes from 25,000 to 150,000 lb of steam per hour; no dust collector required and assures freedom from smoke, even at low ratings; easily adapted for burning gas or oil in combination with coal, or singly; requires minimum maintenance. — AMERICAN ENGINEERING CO.

516—Small Boiler Performance — 4 p Bulletin shows how the packaged Ljungstrom air preheater boosts performance. Boilers as small as 25,000 lb/hr can have advantages of regenerative preheating—saves fuel, boosts output, and permits use of lower grade fuels.—THE AIR PREHEATER CORPORATION.

519—Feedwater Deoxygenation — 12 page Bulletin BW-7 describes advantages of chemical deoxygenation of boiler feedwater with an aqueous solution of Hydrazine. Covers in detail the properties and action of Hydrazine in maintaining boilers as well as recommended methods of application. — FAIRMOUNT CHEMICAL CO., INC.

523—Soot Blowers—Bulletin 1030 describes Vulcan T-30 retractable soot blowers, available in lengths up to 38 ft. Includes sectional drawings and special design features. — COPES-VULCAN DIVISION.

524—Packaged Firetube Boiler — Bulletin MR-1A briefly describes the new Model "R" Generator. Available in sizes from 10 hp through 600 hp with design pressures ranging to 250 lb. Quality engineering and greater simplicity are emphasized. — AMES IRON WORKS, INC.

526—2-Pass Automatic Boilers — Bulletin tells how Continental packaged boiler design cuts down on inspection and maintenance costs and keeps down time to a minimum. — BOILER ENGINEERING & SUPPLY CO.

527—Pneumatic Spreader Stoker — Bulletin shows how unit combines coal drying, metering, conveying, uniform burning and cinder return in one efficient system. — IRON FIREMAN MFG. CO.

530—Coal Plant Specifications — 64 page brochure, including 5 drawings, is a comprehensive guide for preparing specifications on coal-fired, low-pressure heating plants in the size range of 750,000 to 5,500,000 Btu/hr. All aspects affected by choice of fuels from storage bin to stack design covered fully. — BITUMINOUS COAL INSTITUTE.

535—Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions. — CLEAVER-BROOKS CO.

539—Industrial Burners — How to keep heating costs low with Hev-E-Oil commercial-industrial burners described in literature SPI-859. Models from 5 to 150 gph; automatic, electronic controls; Hev-E-Duty power gas burners and combination gas/oil burners from 720,000 to 21,000,000 Btu. — INDUSTRIAL COMBUSTION, INC.

550—Coal Crushers — Catalog 784-C describes single and double roll crushers, swing hammer pulverizers for all sizes of plants. — JEFFREY MANUFACTURING COMPANY.

557—Coal — Current brochure on "Prescription Coals." — A. T. MASSEY COAL CO., INC.

574—Packaged Generator—Bulletin 582 describes Vapormatic Coil-N-Shell Steam Generator for service requirements of 5 to 150 psig. Gives operation features and specification data. Available with gas, oil, and combination gas/oil fuel systems. — TEXSTEAM CORP.

AIR CLEANING AND DUST COLLECTION

Technical Reference Guide and Buyer's Directory for the South-Southwest.

See Pages 33-44

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

701—Peak Load Problems? — Keep your air conditioning and refrigeration systems operating at maximum efficiency during coming peak load months. Catalog tells how Anco treatment removes rust and scale and kills slime and algae in your equipment. — ANDERSON CHEMICAL COMPANY.

705—Test Your Tower—Bulletin offers simple, proved method by which you can determine how closely your actual tower performance measures up to specified performance. Particularly applicable to operations geared to temperature of process cooling water. — THE MARLEY COMPANY.

708—Zeolite Softener — 8 p Bulletin 4530-A discusses the hydrogen zeolite process — its advantages, chemistry and neutralizing variations. — COCHRANE CORP.

711—Refrigeration Condensers—Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost. — HENRY VOGT MACHINE COMPANY.

715—Amine Treatment — Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems. — THE BIRD ARCHER COMPANY.

737—Water Treating Plan — Separate bulletins combine in folder to form "A Complete Water Treating Plan" for boiler feedwater and cooling water treatment. Leaflets cover various aspects of treatment and equipment. — DEADY CHEMICAL COMPANY.

771—Water Treatment — 4 p brochure points out company's 8-point water treatment coverage for elimination of scale, sludge, corrosion and impure steam. — IPCO LABORATORIES, INC.

ELECTRICAL

801—Motors—Bulletin describes and catalogs more popular a-c motors from 1 to 600 hp, for every process and manufacturing requirement. Single phase and polyphase; surpass NEMA specifications. — BROOK MOTOR COMPANY.

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See Pages 81 & 82

807—Motor Bearings — Catalog 258 gives complete listing of cast bronze motor bearings for all makes and sizes.—THE BUNTING BRASS AND BRONZE COMPANY.

813—600-Volt Wiring — How Anaconda Densheath 900 offers long life, high heat and moisture resistance, chemical stability and easy installation is described in Bulletin DM-5612. — ANACONDA WIRE & CABLE CORP.

816—High Voltage Protection — 36 p catalog of linemen's protective equipment describes products for utility and industrial electrical fields. — CHARLESTON RUBBER COMPANY.

842—Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMANN MFG. CO.

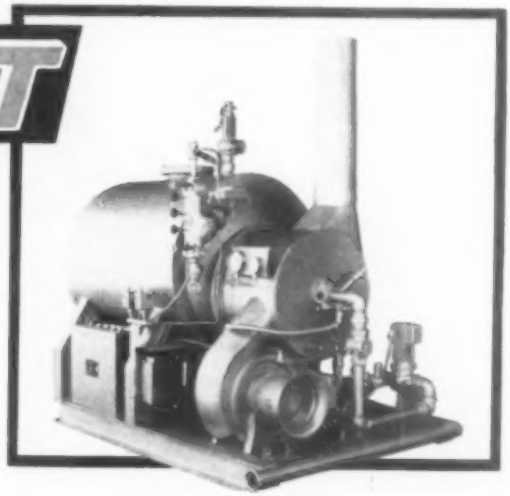
855—Wiring Analyzer — 4 page bulletin describes Model 301 Adequate Wiring Analyzer which quickly, simply and easily tests wiring without confusing calculators or slide rules.—SPRAGUE ELECTRIC COMPANY.

874—High Voltage Rubber Cables—32 p catalog contains information on design features, insulations available, and performance highlights of company's butyl rubber power cable, Durasheath. Also data on kinds of available construction from 600 v to 15,000 v conductors. — ANACONDA WIRE & CABLE CO.

TXT

VAPORMATIC COIL-N-SHELL

The little giant of steam generators



The advanced design and method of steam generation makes the Coil-N-Shell the most compact, efficient, and economical steam generator you can install with a steam pressure from 5 to 150 psig and a steam demand from 50 to 300 HP.

A forced circulation, water tube type generator, the Coil-N-Shell has all components unitized on a common base, requiring only a fraction of the floor space utilized by conventional boilers of comparable rating. The Coil-N-Shell generates steam from a cold start in ten minutes and is ready for high temperature operation immediately.

It is completely automatic, with modulating controls as standard equipment on all models, which are also equipped with automatic shutoff controls and safety alarm. Available with gas, oil and combination gas-oil fuel burning systems.

Complete specifications and operating data for all sizes are contained in Bulletin No. 582 CSB. Write for your copy now.

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Late Bulletins

C-1—V-Belt Drives — Bulletin No. 9102, 36 pages, gives information on "Ultra-V Drives." Selection tables, horsepower tables, drive costs, sheave and belt specifications, installation instructions for sheaves, included. — T. B. WOOD'S SONS CO., Chambersburg, Pa.

C-2—Flexible Couplings — Catalog No. 60, 50 pages, describes misalignment, tells how to select coupling suitable for requirements. Loads are classified, and various types of couplings are grouped for easier selection. Illustrated with photographs, diagrams, and tables. — THOMAS FLEXIBLE COUPLING COMPANY, Warren, Pa.

C-3—Hose Assemblies — Industrial Catalog No. 204, 38 pages, covers complete line of hose, fittings, self-sealing couplings, and related products. Includes specifications for use on general industrial applications such as plant machinery, mobile equipment, and stationary power plants. — AEROQUIP CORPORATION, Jackson, Mich.

C-4—Air Meters — Catalog No. 170, 4-page folder, describes heated thermopile air meter instruments compensated for temperature and rate of change of temperature, for precision measurement of air velocity in industrial applications. Illustrated with photographs and drawings.—HASTINGS-RAYDIST, INC., Hampton, Va.

C-5—Packaged Drives — Bulletin GEA-6885, 12 pages, gives information on "Kinatrol" line of eddy current coupling adjustable speed drives for 5 hp to 100 hp. Explains eddy current coupling operating principle. Data on torque capabilities, regulation and operation of entire packaged drive including drive unit, control enclosure and operator's control. — GENERAL ELECTRIC COMPANY, Schenectady 5, N. Y.

C-6—Drip-Proof Motors — Bulletin No. 196, 4 pages, illustrates five outstanding design features of "Sterlicone Multi-Shielded" drip-proof motors. Explains suitability for many applications were adverse conditions of moisture, humidity, dust, oil and chemicals prevail. — STERLING ELECTRIC MOTORS, INC., 5401 Telegraph Road, Los Angeles 22, Calif.

C-7—Oil Coolers — Catalog 1059, 10 pages, gives data on oil to air and oil to water oil coolers for torque converters. Describes and illustrates mobile and stationary applications up to 600 hp; construction

features; diagrams; performance charts; dimension tables. — YOUNG RADIATOR COMPANY, Racine, Wis.

C-8—Roller Bearings — Book No. 2760, 52 pages, covers "Spherical Roller Bearings and Pillow Blocks," a line of bearings combining maximum diameter and quantity of convex rollers for each bearing size; precision machined centrifugally-cast bronze retainers; and high, heavy inner race shoulders. — LINK-BELT COMPANY, Dept. PR, Prudential Plaza, Chicago 1, Ill.

C-9—Motor Control — Catalog 5900, 72 pages, provides condensed listing of general products for motor control. Charts for magnetic and manual starters give horsepower, motor speed, heater size, heater ampere ratings, prices, for easy selection. Design features are illustrated. — FURNAS ELECTRIC COMPANY, 1047 McKee St., Batavia, Ill.

C-10—Maintenance Painting—"How to Reduce Painting Costs," 12-page booklet, is an illustrated guide to economical maintenance painting. Gives formula for comparing paint costs; three ways to save on painting costs; discusses spray painting compared to brush or roller jobs. — BARRELED SUNLIGHT PAINT COMPANY, Providence 1, R. I.

C-11—Water Tube Boilers — Catalog SB-57R, 20 pages, describes two types of two-drum water tube factory assembled boilers — one for any firing method and one for oil and/or gas firing — both types featuring integral water cooled furnaces. Illustrated with sectional views, dimensional drawings, and mechanical data.—ERIE CITY IRON WORKS, Erie, Pa.

C-12—Pressure Controller — Product Specification P41-2, 2 pages, describes a pneumatic controller for pressures to 170 psig and for differentials from —30 in. H_2O to 30 in. H_2O. Includes schematic drawing showing operation, and tabulation of piping recommendations. — BAILEY METER COMPANY, 1050 Ivanhoe Road, Cleveland 10, Ohio.

C-13—Gate Valves — Bulletin NP-76E, 2 pages, describes and illustrates gate valves, having aluminum body, stainless steel stem, and nylon disc seats, for industrial application requiring resistance to a wide range of chemicals. Includes engineering data and specifications. — OPW-JORDAN, 6013 Wiehe Road, Cincinnati 13, Ohio.

C-14—Ventilating Equipment.—Bulletin No. B-500, 18 pages, describes rigid vinyl and reinforced plastic collecting hoods, ducts and stacks, elbows and other fittings. In-

New fuel cut-out control by Reliance

Pipe one device for double protection

and add alarm for approaching low water level if desired . . .

Reliance Levalarm EA-100P

Using but one water chamber — one set of pipes to boiler — this new Reliance Fuel Cut-out and Alarm control gives you two efficient devices in one.

At one end (right hand above) a positive float-operated switch cut-out; at the opposite end, an electrode-type control using U.L.-approved transformer-relay hook-up — completely independent of the float-type control but employs a common water chamber.

Check these possible use-combinations of the Levalarm EA-100P:

1. Dual fuel cut-out control.
2. Float-operated fuel cut-out and electrode-operated low water level alarm.
3. Electrode-operated fuel cut-out and float-operated low water alarm.
4. Float-operated fuel cut-out and electrode-operated fuel cut-out and electrode-operated low water alarm.

This Levalarm is the convenient answer in cases where two independent fuel cut-outs are required.

And this Levalarm provides outstanding additional safety to the operation of factory assembled boilers.

Write today for full description of this new safety device.

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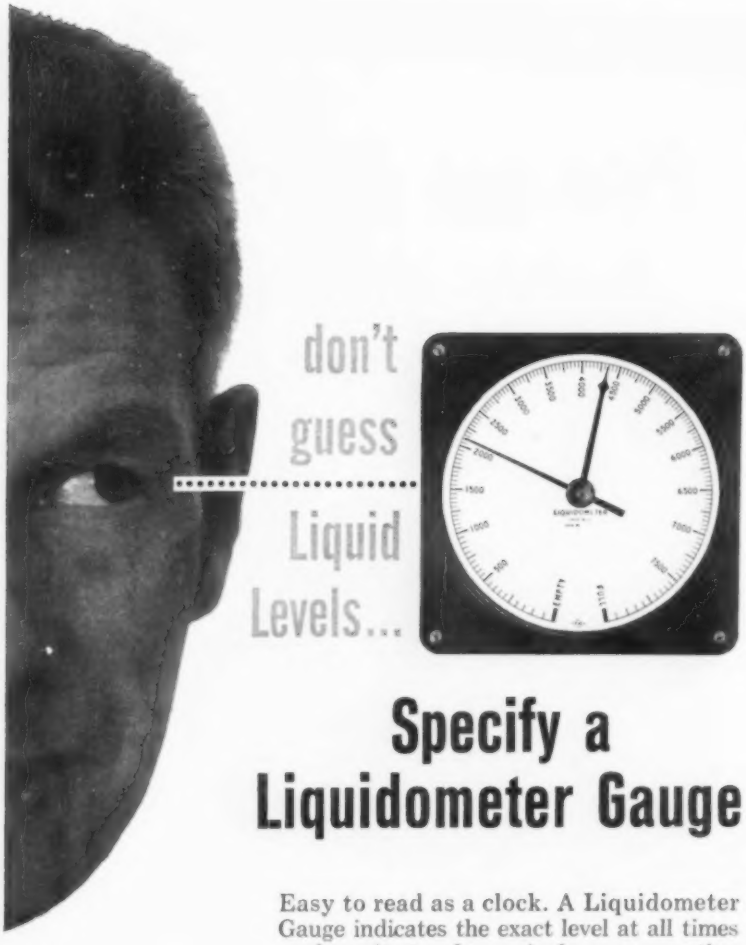
Reliance BOILER SAFETY DEVICES



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Easy to read as a clock. A Liquidometer Gauge indicates the exact level at all times ... shows it at a glance. And gauge operation is completely automatic – as far as 250 feet from the tank – without need for auxiliary power of any kind.

A Liquidometer Tank Gauge measures virtually any liquid. It's simple to install – requires no maintenance. Many have provided over 30 years of efficient, dependable service. All are approved by Underwriters' Laboratories and Factory Mutual.

Whether your gauging needs require an automatic Liquidometer Gauge, a hydrostatic Levelometer or a tank-site-indicating Direct Reader, you'll get the best by specifying Liquidometer. For complete details write Dept. F.

Since 1920 ...of proven quality

THE LIQUIDOMETER CORP.

LONG ISLAND CITY 1, NEW YORK

(Continued from Page 87)

cludes list of standard sizes, specifications and chemical resistance data, for plant application in handling corrosive fumes. — HEIL PROCESS EQUIPMENT CORP., 12901 Elmwood Ave., Cleveland 11, Ohio.

C-15—Packaged Boilers — Catalogs, 8 pages each, cover "Packaged Boilers and High Temperature Equipment for Heating and Process Loads," and "Packaged Boiler for Heating or Processing." Specifications, ratings, and dimensions are given, with discussion and sketches of recommended boiler room layout. — CLEAVER-BROOKS COMPANY, 326 East Keefe Ave., Milwaukee 12, Wis.

C-16—Material Handling — Bulletins 15005-5A-59 "Load Lifter Cranes," 15010 - 15C - 59 "Portable Electric Hoists," and 15025-1C-59 "Shaw-Box Load Handling Equipment," cover lines of overhead material handling equipment. Specifications, prices, photographs and diagrams are included.—MANNING, MAXWELL & MOORE, INC., Muskegon, Mich.

C-17—Condensation Pumps — Bulletin No. CP-600, 12 pages, describes six basic condensation pumps, including design features, general specifications, engineering data, dimension drawings, construction and operation details, and a check list to follow in selection of a pump. Both single and duplex units are covered. — AMERICAN AIR FILTER CO., INC., Dept. PD, 215 Central Ave., Louisville 8, Ky.

C-18—Fire Extinguishers — 1960 Catalog, 20 pages, lists and illustrates complete line of fire fighting equipment including hand portable extinguishers, stationary fire equipment, piped systems and large capacity mobile equipment such as fire jeeps and trucks. — ANSUL CHEMICAL COMPANY, Catalog Dept., Marinette, Wis.

C-19—Butterfly Valves — Bulletin No. 5904, 36 pages, covers Darling-Pelton valves for hydrostatic operating pressures up to 125 psi and velocities up to 16 ft per sec.; construction and design, dimensions, directions for ordering, general hydraulic data, materials and methods of operation. — DARLING VALVE & MANUFACTURING CO., Williamsport 28, Pa.

C-20—Single Control Valve — Bulletin WC-122, 4 pages, describes Monotrol, a single control valve for zeolite softeners, ion exchange units and filters. Discusses design, operation and construction details of cast iron unit and exclusive all-plastic unit for corrosive service.—GRAVER WATER CONDITIONING CO., 216 West 14th St., New York 11, N. Y.

Southern News Briefs

(*Continued from Page 22*)

PLANT PERSONNEL

Eldon E. Campbell, formerly area engineer of American Viscose Corp.'s Fibers Division at Front Royal, Va., succeeds **M. P. Gooden** as plant engineer. **A. G. McVay** is plant manager at Front Royal.

Plant manager of Gerber Products Company's new facility at Asheville, N. C., is **John Erichson.**

David W. Quinn has joined the Vulcan Rubber Products Division of Reeves Brothers, Inc., as manager of the company's Grace plant near Rutherfordton, N. C. Mr. Quinn formerly was vice-president in charge of coated fabrics with the Empire Division of Hettrick Manufacturing Co. at Statesville.

Promotions recently announced by Bowaters Southern Paper Corp., Calhoun, Tenn., include: **L. E. Culbertson,** from resident engineer to acting mill manager; **M. J. Osborne,** from electrical superintendent to chief engineer; **W. J. Parson,** from paper mill superintendent to general superintendent—newsprint; **J. K. Dyer,** from sulphate superintendent to general superintendent — pulp. As a result of the promotions, **J. N. Swartz** is now technical director of Bowaters Carolina Corp., Bowater Board Co., and Bowaters Southern; **Sam Richardson** is assistant to the vice-president; **Stewart Aycock** is office manager. Paper mill superintendent is **D. H. Fuller,** and sulphate superintendent is **W. C. Pierce. E. H. Buchheit** is now electrical superintendent; and **N. G. Holtz** is plant engineer.

Newly appointed assistant to the general manager of Combustion Engineering, Inc., 911 W. Main St., Chattanooga, Tenn., is **Joe E. Visnich.**

Glenn Gammon is district manager for National Cylinder Gas Division, whose new liquid oxygen plant has been opened at 3301 S. National St., Dallas, Tex.

Elmer B. Hurst, assistant personnel director of Virginia Electric and Power Company, has been ap-

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Bringing the **most modern bearings** to the small lot and occasional buyer

Today your local Bunting Distributor can give you all the advantages of the most advanced bearing metallurgy. Available instantly from distributor stocks are finished bearings and bars made of Bunting Cast Bronze and Sintered Bronze, and Bunting Bearing Aluminum Bars.

The many hundreds of stock sizes of Bunting finished bearings and bars in these most modern metals meet practically every mechanical and cost requirement for machinery production and maintenance.

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Small lots of special design bearings, not obtainable from stock, can be procured immediately from fully equipped machine shops in Bunting branches. The wide range of sizes of Bunting Stock Cast Bronze and Sintered Bronze Bearings makes the alteration of a stock item to a special bearing easy and economical. Bunting Cast and Sintered Bronze and Bunting Bearing Aluminum Bars provide the materials for special sizes which cannot be made from stock bearings. Your local Bunting Distributor can arrange for such work.

1. Typical Cast Bronze Stock Bearing
case in point
Bunting Bearings available from stock provide without further finishing a bearing suitable for practically any usual application, and in dimensions ranging from 1/16" ID x 1/16" OD x 1/2" long to 5" x 6" x 9".
2. Sintered Bronze Stock Flange Bearing
3. Sintered Bronze Stock Thrust Bearing
4. Sintered Bronze Stock Plain Bearing

Ask for Catalogs:

No. 158—Complete listing of sizes of Bunting Cast Bronze and Sintered Bronze Bearings and Bars, and Bunting Bearing Aluminum Bars. Pocket size edition.

No. 258—Complete listing of Cast Bronze Electric Motor Bearings for all makes and sizes of electric motors.

No. 46—Technology of Bunting Bearing Aluminum. A technical treatise on the composition, machining and use of this new bearing metal. Ask your local Bunting Distributor.

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Southern News Briefs

pointed safety director, succeeding **Ernest C. Bookman,** who has retired after 43 years with the company. Mr. Hurst joined VEPCO in 1929, and has served in various positions in the distribution department and as manager at Woodstock and Altavista.

Newly elected president and chairman of the board of American Enka Corporation, Enka, N. C., is **Philip B. Stull,** succeeding **Wm. Gage Brady, Jr.,** who has retired. Mr. Stull, who was formerly a vice-president and director of Hercules Powder Co., Wilmington, Delaware, has been a director and member of the executive committee of American Enka since 1956.

As a result of the recent reorganization of the Baltimore Division of The Martin Company, **John J. Slattery** heads the Electronics Division as general manager.

Piping Engineering Company of Tulsa, Okla., has announced the appointment of **H. K. Abernethy** as chief engineer and general manager. Mr. Abernethy, a mechanical engineering graduate of Oklahoma State University, has had extensive experience in the refinery construction and operations field.

F. Earl Ellis of Allendale, S. C., has joined the Chemstrand Corporation at Decatur, Ala., in the position of supervisor, personnel practices. Mr. Ellis had been affiliated with the E. I. duPont de Nemours Co., Inc., Savannah River Plant, for eight years. He is a graduate of the University of South Carolina.

Vice-president of engineering at Electronic Communications, Inc., St. Petersburg, Fla., is **J. B. Williams,** formerly with Philco Corporation. His position with ECI is a new addition to the management staff structure, in line with planned expansion.

Howard E. Steele will be in charge of all manufacturing operations at the New Atlanta plant of Knox Glass, Inc. Resident engineer during construction is **William B. Deible,** chief engineer of the company's furnace and construction department.

Texas Vitrified Pipe Co. Appoints Engineer

Appointment of **David G. Chase** to the position of Director-Sanitary Engineering of the **Texas Vitrified Pipe Company, Mineral Wells, Texas,** has been announced.

Creation of the new sanitary engineering post for Mr. Chase is a part of a program instituted some time ago, which has been aimed at providing municipal officials, consulting engineers, and contractors with on-the-job assistance. Mr. Chase will make his headquarters in Fort Worth.

Paul F. Dickens Los Alamos, N. M.

Paul F. Dickens, of Los Alamos, New Mexico, is now production superintendent of the Electrical Utilities System. His duties include supervision of operations of the present

steam and diesel power plants, and the new coal burning steam power plant being planned for operation in the Four Corners area, by the Town of Farmington, New Mexico.

Mr. Dickens was employed as assistant superintendent at the Miami Copper Company power plant for a number of years prior to moving to Los Alamos, where he oversaw construction and placed in operation the new TA-3 power plant. He also served as power plant superintendent for The Zia Company, an operating and maintenance contractor, for the U. S. Atomic Energy Commission, at the Los Alamos Atomic Project.

VEPCO Promotes Hurst

Elmer B. Hurst, assistant personnel director of the **Virginia Electric and Power Company,** has been appointed safety director of the company. He replaces Ernest C. Bookman, who has retired.

A native of Matthews County, Va., Mr. Hurst attended the College of William and Mary. He joined Vepco in 1929 at the company's Fredericksburg office. He later served in various positions in the Distribution Department at Williamsburg, Norfolk and Portsmouth. He was appointed manager at Woodstock in 1949, and manager at Altavista in 1951. He was transferred to Richmond in 1955, to become director of Vepco's employee information program.

National Coal Association Division Heads Appointed

Appointment of three division heads of the new Marketing Department of the **National Coal Association** has been announced.

Carroll F. Hardy was named director of the Bituminous Coal Institute Division. Mr. Hardy was managing director of BCI before it merged with NCA.

Harry C. Ballman was made director of the Air Pollution Control Division, working with government agencies, civic organizations and coal industry groups, to obtain cleaner air from processes utilizing coal. Mr. Ballman was formerly manager of field engineering services of BCI.

Paul L. Brown became director of the Manpower Development Division. He will initiate, administer, and participate in all industry-wide programs previously carried on by the American Coal Sales Association, where he was director of training and education. The American Coal Sales Association merged with NCA in January.

Safety Award For Georgia Power Co.

The 5,400 employees of the **Georgia Power Company** recorded one of the best safety years in the company's history during 1959 by completing the year without a single fatality and with only 15 accidents serious enough to cause loss of time from work.

The employees worked a total of more than 10,502,000 man-hours — once during the year they worked more than two million consecutive man-hours, and once more than one million consecutive man - hours, without a disabling injury. For these achievements the Edison Electric Institute's "Million Man - Hour" award is being presented the company.

Watson Engineers — N. C.

C. Harry Phillips has become Business Manager of **Watson Engineers**, 1101 East Bessemer Avenue, **Greensboro, North Carolina.**

Mr. Phillips has been Sales Manager for Engineered Plastics of Gibsonville, North Carolina. A native of Greensboro, he attended University of North Carolina, is member of Southern Textile Association, Illuminating Engineering Society, North Carolina Society of Engineers and Greensboro Engineers Club.

Vulcan Steel Container Names Cook — Tennessee

Vulcan Steel Container Co., Birmingham, Alabama, has announced the appointment of Gerry E. Cook

as sales-service representative for the State of Tennessee.

A native of Tennessee, Mr. Cook for the past 15 years has been active in the paint and chemical fields, having served as manager of sales of raw materials and supplies. He is a past president of the Memphis Paint, Varnish and Lacquer Association. His appointment as representative for Vulcan Steel Container Co. enables him to offer the company's complete line of steel pails and drums. Mr. Cook's business address is 625 South Front Street, Memphis, Tennessee.

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WHIRLEX ID FANS

High Erosion Resistant Fan Wheel Assures Longer Life... Minimum Maintenance

The largest furnace in the country producing merchant pig iron was recently placed in service as part of an expansion program by a major Southern mill. The new furnace has a rated capacity of 1000 tons per day and is one of the most modern in the country with respect to mechanization and automatic controls.

Because of their unique design and high erosive resistance, WHIRLEX heavy duty induced draft fans were chosen to handle the hot blast furnace gas. The three units shown here carry approximately 150,000 cubic feet of gas per minute. Preliminary fan examinations show wear to be less than a third that of ordinary fans designed for this purpose.

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NEW COCHRANE UNI-PAC* PACKAGED DEMINERALIZER

controls your least uniform raw material ...WATER

Are seasonal changes in the mineral content of your water supply a costly headache? Maintain quality standards year round with this *new* Cochrane Uni-Pac Packaged demineralizer, designed expressly for process systems. Sizes to 3500 GPH factory assembled, easily installed and operated. Send for Publication 5819.

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Southern News Briefs (Continued)

General Electric — S.E.

General Electric Company has announced the appointment of **Robert H. Harris** of **Atlanta** to the newly created post of Southeastern Regional Defense Representative for the company's Electronic, Atomic and Defense Systems Group.

In his new position, Mr. Harris will be responsible for coordinating

G-E aviation and defense industry activities in a 10-state Southeastern area. His headquarters will be in Atlanta.

A native of Montgomery, Alabama, he joined General Electric in 1947 as a guided missiles engineer with the G-E Engineering and Consulting Laboratory in Schenectady, and later worked for the company's Aviation Division as an application engineer.

In 1949 he was transferred to Atlanta where he has served in various specialist and managerial capacities. Prior to this new post he was Manager of Aviation and Defense Industries Sales for the Southeast territory.

As a member of the Class of 1943, Mr. Harris received his B.S. in Aeronautical Engineering from Auburn University.

Allis-Chalmers—S.W.

Appointment of three representatives to its Southwest Region has been announced by **Allis-Chalmers Industries Group.**

The men are **Warren W. Chapman, Shreveport** district; **T. J. Curlee, Jr., Beaumont** district; and **Duane L. Miller, Amarillo** district.

Also announced is the appointment of **James Barrett** as sales representative to the **El Paso, Texas,** district.

Mr. Chapman is an electrical engineering graduate of Texas A & M; Mr. Curlee obtained his industrial engineering degree from Texas College of Arts & Industries; Mr. Miller is a graduate industrial engineer of Texas Technological College, and Mr. Barrett is a mechanical engineering graduate of New Mexico College of A & M. They recently completed Allis-Chalmers training course for graduate engineers.

Rittelmeyer & Co. Thanks Customers

"We have been notified by The Griscom-Russell Company that as of February 4 their account in this territory will be handled by T. C. Heyward & Company, 518 E. Morehead Street, Charlotte 3, N. C. The Hamilton-Thomas Corporation, who owns the C. H. Wheeler Manufacturing Company, has purchased control of The Griscom-Russell Company and the new owners will consolidate their sales into the C. H. Wheeler organization, whom T. C. Heyward & Company has represented as many years as we are old.

"Although after February 4 we will no longer have any authority over the servicing of Griscom-Russell equipment which we have sold in the past, we wish our old customers would avail themselves of our help if ever they feel our files or memory of work done will be of value.

"It has been our pleasure to represent the Griscom-Russell Company since 1925 and we wish to thank our many customers and friends for all that they have done for us in giving us business and making our life interesting and a pleasure. This change has come to us so suddenly that we do not know what our future activities will be as regards the sale of heat exchangers. On any quotations active until our contract expires we will have ninety (90) days or about the middle of May to complete these negotiations. After that everything will be turned over to the T. C. Heyward Company and after February 4th all new quotations will be made by them.

"We again wish to thank our customers and friends for the many past favors relating to Griscom-Russell business. They have been a fine company to represent and we shall miss being associated with their organization."

By Rittelmeyer & Company, Inc.
John M. Rittelmeyer, President

Continental Conveyor & Equipment Co. — Ala.

Continental Conveyor and Equipment Co., Birmingham, Ala., announces the appointment of **J. E. Carroll** as Sales Manager. A graduate of Georgia Institute of Tech-

nology, Mr. Carroll has been associated with Continental Conveyor's predecessor company (Industrial Division, Continental Gin Co.) since 1944 and has been District Sales Manager in Atlanta since 1951. In his new position, he will be in charge of all sales activities with offices in Birmingham until the company's new plant and office building is completed at Winfield, Alabama, in approximately three months.

Noland Co. — Va.

The appointment of **E. M. Myers** to the post of manager of merchandising, General Office Electrical Department has been announced by

the **Noland Company, Inc., Newport News, Va.**

Mr. Myers replaces **C. P. Andrew,** who assumes duties as a consultant to the company until his retirement. Mr. Myers joined Noland in 1948 as electrical salesman in the company's Winston-Salem branch, and later was transferred to the Roanoke branch where in 1951 he was appointed manager, Electrical Department.

In May 1959, Mr. Myers was promoted to General Office to become special field sales assistant to Mr. Andrew.

FUTURE EVENTS of Engineering Interest

March 6-8: Southern Safety Conference & Exposition, Robert Meyer & George Washington Hotels, Jacksonville, Fla. W. L. Groth, Exec. Dir., Southern Safety Conference, Inc., P. O. Box 8927, Richmond 25, Va.

March 6-9: ASME Gas Turbine Power & Hydraulic Conference, Rice Hotel, Houston, Texas. American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.

March 7-8: Heat Transfer Symposium, Mechanical Engineering Department, University of Florida, Room 512 — Engineering & Industries Bldg., Gainesville, Fla. Prof. John C. Reed, Head, Mech. Engrng. Dept.

March 14-16: National Association of Corrosion Engineers, 16th Annual Conference & Corrosion Show, Dallas, Tex. T. J. Hull, Exec. Sec'y., NACE, 1061 M&M Bldg., Houston 2, Tex.

March 16-18: 23rd Annual Short Course for Superintendents & Operators of Water & Sewerage Systems, Louisiana State University, Baton Rouge, La. Fred H. Fenn, Dean, College of Engrng.

March 29-31: 22nd Annual American Power Conference, Hotel Sherman, Chicago, Ill. R. A. Budenholzer, Conference Director, Mechanical Engineering Dept., Illinois Institute of Technology, 3300 Federal St., Chicago 16, Ill.

April 4-5: ASME Solar Energy Symposium, Room 512, Engineering & Industries Bldg., University of Florida, Gainesville, Fla. Prof. John C. Reed, Head, Mechanical Engineering Dept.

April 18-20: Southern Metals Conference, American Society for Metals, Tutwiler Hotel, Birmingham, Ala. J. R. Kattus, Chm. '60 SMC, Southern Research Institute, 2000 Ninth Ave. South, Birmingham.

April 20-22: Symposium on Instrumentation for the Process Industries, Chemical Engineering Dept., Agricultural & Mechanical College of Texas, College Station, Texas.

April 26-28: 41st Annual Convention & Welding Exposition, Biltmore Hotel & Great Western Exhibit Center, Los Angeles, Calif. Information Center, American Welding Society, 33 W. 39th St., New York 18, N. Y.

April 27-29: Sixth Annual Instrument Society of America Conference and Exhibit, and First Pulp and Paper Division Symposium, Pensacola, Florida. G. W. Howlett, P. O. Box 4426, Pensacola, Florida.

May 9-13: 2nd Southwestern Metal Exposition & Congress, American Society for Metals, State Fair Park & Sheraton Hotel, Dallas, Texas. Allan Ray Putnam, Mg. Dir., ASM, Metals Park, Novelty, Ohio.

Combustion Engineering New District Offices

Combustion Engineering, Inc., is establishing district offices in **Charlotte, N. C.,** and **Jacksonville, Fla.,** to handle sales, installation and service of steam generating equipment and all other C-E products in the States of Virginia, North Carolina, South Carolina, Georgia and Florida. Combustion has appointed Weldon Combs, formerly manager of the Dallas office, to be district manager at Charlotte and William Clemens of the Kansas City sales staff to be district manager at Jacksonville.

Combustion Engineering announced the termination effective January 1, 1960 of its sales agency agreement with T. C. Heyward and Company of Charlotte, North Carolina and Jacksonville, Florida.

This step was taken in order to bring the company's organization in these areas under the same policy as the rest of the country, where customer negotiations are conducted directly with Combustion's district offices. For the past twenty-five years Mr. T. C. Heyward and his associates have ably represented Combustion throughout the Southeastern area and the decision to terminate this representation therefore was reached with the greatest reluctance.

Babbitt

Adjustable

SPROCKET RIM

with Chain Guide

Changes that Danger Zone to a SAFETY ZONE

The distance between the floor of your plant and your overhead valves is a DANGER ZONE when piled up boxes or even ladders are used to reach the valves.

Turn it into a SAFETY ZONE — equip your overhead valves with Babbitt Adjustable Sprocket Rims with Chain Guides.

- They simplify pipe layout.
- They fit any size valve wheel.
- They are easy to install and operate.
- They operate any valve from the floor.
- They save time and money.
- The first cost is the only cost (no maintenance).
- They are packed completely assembled (one to a carton), with easy-to-follow instructions.
- A hot-galvanized rust proof chain is available for all sizes.

Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. If your supplier does not carry them, contact us direct.

Babbitt

168-9

STEAM SPECIALTY CO.

3 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

Southern News Briefs (Continued)

Cooper-Bessemer — Tex.

David K. Goff has been transferred to **The Cooper-Bessemer Corporation's Houston** branch office as a sales engineer, where he will work

under the immediate supervision of Earl P. Martin on the application and sale of compressors and engines in that area.

Since 1957, Mr. Goff has been assigned to the sales department at the company's headquarters in Mount Vernon, Ohio. He is a petroleum engineering graduate of the University of Houston.

J. F. Pritchard Promotes Young—St. Louis

A. Russell Young has been appointed Assistant Executive Vice-President and General Manager of **J. F. Pritchard and Company** with headquarters at St. Louis, Mo. The engineering and contracting firm serves the natural gas, petroleum, chemical and power industries.

After graduation from the University of Kansas, Mr. Young joined the Pritchard organization as an engineer. He became manager of the Gas Division in 1944, and in 1954, he was appointed Vice-President in charge of the Gas Division.

Allis-Chalmers — La.

Appointment of **Paul A. Dimberg** as manager of utility sales and of **Hugh C. Blair** as manager of industrial sales in the **New Orleans** district has been announced by **Allis-Chalmers Industries Group.**

Mr. Dimberg is a graduate electric engineer of the U. S. Naval Academy and joined Allis-Chalmers in 1947. Mr. Blair is an electrical engineering graduate of Louisiana State University and was an application engineer in Allis-Chalmers transformer department before being assigned to the New Orleans district in 1951. Both have been sales representatives in the New Orleans district.

A. M. Byers — Atlanta

H. Grady Rogers, Jr., has been appointed a field service engineer for **A. M. Byers Company,** it was announced by J. A. Cain, **Atlanta Division** manager.

Mr. Rogers was formerly associated with the Orkin Exterminating Company and the Campbell Soup Company. He is a graduate of Auburn University with a degree in mechanical engineering.

S. Howes Co. — S.E.

The **S. Howes Company,** located in Silver Creek, New York, has just announced the establishment of a

new sales territory covering the Southeastern States.

John M. Parker, a native of Kentucky, has been named Sales Engineer, with responsibility for sales, engineering and service. The S. Howes Company produces a broad line of Eureka equipment for the feed and seed trades, and for the food, cosmetic, chemical and other process industries.

American Gilsonite — Ga.

American Gilsonite Company has appointed **Applied Engineering Company** of Orangeburg, S. C., as exclusive distributor for Gilsulate underground pipe insulation for **Georgia.**

Applied Engineering Company has been handling Gilsulate in the Carolinas for over five years, maintaining warehouse stocks in Orangeburg and Raleigh. Gilsulate now will also

be stocked for less than carload shipments in Atlanta, with carload lots shipped directly from the factory. The Atlanta address is 500 Piedmont Ave., N.E.

New I-T-E Tampa Office

Samuel H. Wilson has been named manager of the new Tampa, Fla., district sales office of **I-T-E Circuit Breaker Company** at 221 N. Howard Ave.

The new office assumes the sales responsibility formerly handled by

Robert P. Smith & Co., manufacturers' representatives, whose offices are at Jacksonville, Eustis and Tampa, Fla.

Mr. Wilson is a 1948 graduate of Virginia Polytechnic Institute, where he received a bachelor's degree in electrical engineering. He is a member of the American Institute of Electrical Engineers and of the honorary engineering fraternities of Eta Kappa Nu and Tau Beta Pi. He has had engineering and plant management experience with the U. S. Department of Agriculture.

Tube Turns Plastics Elects Erich — Ky.

Election of **Earl A. Erich** as vice-president of **Tube Turns Plastics, Inc., Louisville, Ky.** has been announced. The firm, an affiliate of Chemetron Corporation, Chicago, is a pioneer manufacturer of injection molded fittings and other piping components of unplasticized polyvinyl chloride and other plastics.

Mr. Erich began his career as a research chemist for Atlas Mineral Products Company and later organized that company's thermoplastics division. He joined Tube Turns Plastics' technical service staff in 1955 as a specialist in solving piping corrosion problems. He is a member of the National Association of Corrosion Engineers, Society of the Plastics Industry, American Chemical Society and the American Welding Society.

5 years of operation at the Possum Point Power Station of

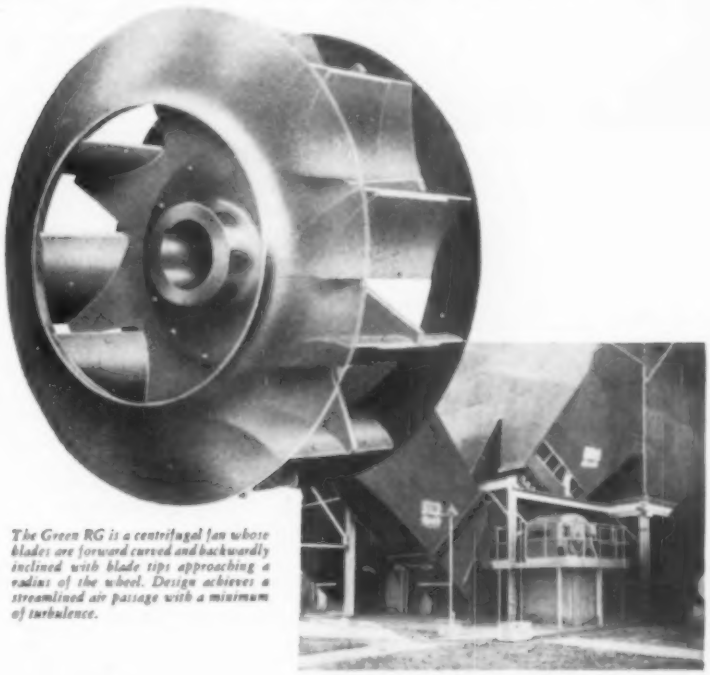
VIRGINIA ELECTRIC and POWER COMPANY

With Green RG Fans, of course.

When Virginia Electric and Power Company planned their Possum Point Power Station, with Stone & Webster consulting, they selected Green RG Fans for both induced and forced draft.

Green RG Fans are rugged, reliable, self-cleaning and accessible.

When you want trouble-free fan performance — consult Green.



The Green RG is a centrifugal fan whose blades are forward curved and backwardly inclined with blade tips approaching a radius of the wheel. Design achieves a streamlined air passage with a minimum of turbulence.

This is the induced draft Green RG Fan installation at the Possum Point Power Station. ¼" housing and inlet boxes. ½" scroll liners. Diamond checkered floor plate blade liners. Air-cooled, self-aligning sleeve bearings. 600 HP, 880 RPM motors.

Green

THE GREEN FUEL ECONOMIZER CO., INC.

BEACON 3, NEW YORK

SARCO

Here are 7 Sound Reasons Why the Thermo-Dynamic Does a Better Job of Trapping

1. *Simplicity*—has only one moving part. 2. *Maintenance*—practically zero. 3. *Wide pressure range*—one trap for all pressures from 10 to 600 psi. 4. *Uniform performance*—operates equally well on heavy, light, or no condensate load. 5. *Operates against back pressures*—up to 50% of inlet pressure. 6. *Rugged*—unaffected by superheat, water hammer, vibration, or corrosive condensate. 7. *Minimizes inventory* of spare parts.

Maintenance Time: 40 Seconds. If it now takes your maintenance crew more than a couple of minutes to service an ordinary trap, you're throwing away valuable time. This Sarco Thermo-Dynamic can be cleaned, blown out if necessary, and reassembled on the line in as little as 40 seconds.

For Prompt Information on the TD-50 . . . or for fast help on the efficient solution of any steam trapping problems, get in touch with a SARCO District Office, Sales Representative, or Distributor. (There's one near you.)

Only SARCO makes all 5 types:

Thermo-Dynamic* • Thermostatic • Liquid Expansion • Float Thermostatic • Inverted Bucket

*U.S. Pat. No. 2,817,353 TM Reg. U.S. Pat. Off. 1409

SARCO COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

Southern News Briefs (Continued)

Edwards Co. — S.E.

Richard Kingston has been appointed Southern regional engineer for **Edwards Company, Inc.,** producer of electrical control communications and protection equip-

ment. Mr. Kingston, who will be stationed in Atlanta, Ga., came with the company in 1957 as a district technical representative. He had formerly been an electrical system designer and subsequently chief sales engineer for Stromberg-Carlson.

New Turbine-Generators Georgia & Louisiana

Two paper firms with plants in the Southern United States have placed orders for industrial steam turbine - generator units totaling 40,000 kilowatts in capacity with **General Electric Company's** Medium Steam Turbine, Generator and Gear Department.

A 20,000 kilowatt unit will be installed by the **Rome Kraft Company** in **Rome, Ga.**

Scheduled for delivery in early 1960, this unit will be of the automatic extraction design.

Steam will initially enter the turbine at 850 psig, at 825 F. Steam will be extracted at 150 psi and at 50 psi. The Rome Kraft Co. thus will have available some 605,000 pounds of steam for process use each hour.

Electric power will be produced by a generator rated 22,059 kilovolt ampere and used in the mill which has a daily production of 725 tons of bleached Kraft container board.

International Paper Company's Southern Kraft Division operation at **Bastrop, La.,** will utilize a 20,000 kilowatt steam turbine-generator unit employing high temperatures and pressures.

Steam coming from the boiler will be at 1250 psig at 950 F. The steam turbine will drive a 25,600 kilovolt ampere hydrogen-cooled generator to provide electric power for the Louisiana mill, which had a daily production of some 560 tons of bleached Kraft paper and board.

Shipment of International Paper's new powermaker is scheduled for mid-1960.

Foster Grant Baton Rouge Personnel

The appointment of five men to key posts at its **Baton Rouge** chemical plant has been announced by **Foster Grant Co., Inc.,** as a part of its program establishing the Louisiana operation as a separate Chemical Division.

Charles C. Brewer, formerly Technical Assistant to the Plant Manager, ha been named Assistant Plant Manager. **Charles V. Sleeth** has been appointed Sales Manager for the Chemical Division.

Alvin J. Pokorny is Superintendent of Engineering and Maintenance, **James H. Mayes** is Technical Superintendent, and **Frank E. Jordan** is Chemical Division Controller and Purchasing Agent.

Mr. Brewer, a native of Mooringsport, Louisiana and a Chemical Engineering graduate of Louisiana Polytechnic Institute and Louisiana State Univeristy, was once associated with Dow Chemical Co. at Freeport, Texas, and more recently with the Girdler Company, of Louisville, Kentucky, before joining Foster Grant in 1956 as production superintendent at Baton Rouge.

Mr. Sleeth, formerly of Charleston, W. Va., has been with Foster Grant since 1953.

Mr. Pokorny, a University of Texas graduate, is a registered professional engineer in Louisiana and Texas and was associated with Gulf Oil Corporation and Venezuela Gulf Refining before joining Foster Grant in 1955.

A native of Robstown, Texas, Dr. Mayes received his degree in Chemical Engineering from Texas College of Arts & Industries and later earned a doctorate in chemical engineering at Johns Hopkins University in Baltimore. He was a research engineer with Sinclair Oil and Refining Company and a process engineer with Crown Central Petroleum before joining Foster Grant in 1957.

Mr. Jordan, a native Louisianan, is a graduate of Louisiana Polytechnic Institute.

Foster Grant Co., Inc. is a major producer of chemicals and plastic

materials. The Baton Rouge chemical plant was opened in 1954 and has undergone almost continuous expansion since that time. The plant currently has a styrene monomer production capacity in excess of 110,000,000 pounds per year.

Daniel Construction Co. Promotes McDougall—S.C.

George McDougall has been appointed Manager of all South Carolina operations of **Daniel Construc-**

tion Co., Greenville, S. C. Mr. McDougall previously had been Chief Engineer.

Joining Daniel in 1947 Mr. McDougall started as a field engineer. In 1948 he was made a project manager and in that capacity supervised such multi-million dollar jobs as the Bowaters newsprint mill at Catawba, South Carolina; three plants for Bigelow Sanford Carpet Company; Owens Corning Fiberglas at Anderson, South Carolina; American Thread Company's plant at Sevier, North Carolina; Southern Paperboard Corporation at Savannah, Georgia; and several others.

TRW Products — Houston

The **Thompson-Ramo-Wooldridge Products Company** has established a sales engineering office in **Houston, Texas. Rigdon Currie**, Southwestern regional sales manager, heads the new office in the Niels Esperson Building. He is responsible for all sales activities in Texas, Oklahoma, Arkansas, Louisiana, and New Mexico.

Mr. Currie received his B.S. in industrial engineering at Georgia Institute of Technology in 1951 and his M.B.A. at Harvard. He is a member of Alpha Pi Mu, industrial engineering honorary, and the Instrument Society of America. Prior to joining Ramo-Wooldridge in 1956, he was a sales engineer for Spotswood Parker & Company in Atlanta, Georgia.

Coming in May

14th Annual PLANT MAINTENANCE Issue

Your important Annual **PLANT MAINTENANCE ISSUE** will again highlight new methods and equipment — plant-tested in the Industrial South-Southwest.

Your reporters will be engineering-operating-maintenance personnel now working in industry — the men who actually encounter plant maintenance problems and solve them.

They will give you the answers to your frequently asked questions — "Who Says What . . . What Does What . . . and How!"

They will discuss piping and valves . . . pumps and compressors . . . electrical and mechanical equipment . . . belts, bearings and gears . . . refrigeration and air conditioning . . . boilers and auxiliaries . . . lubrication . . . supplies and records, etc

You can put many of these new maintenance methods and ideas to work in your plant right now.

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Classification data—If an individual, give name of firm connected with and title of position.

Firm Position

Products manufactured
or nature of business

News Briefs (Cont.)

Horsfield Retires from Reynolds Metals — Ala.

Basil Horsfield, who in 1940 selected **Reynolds Metals Co.'s** Listerhill plant site near Sheffield, Ala., supervised the design and construction, and managed the first Reynolds reduction (aluminum making) and alumina plants, has retired.

Mr. Horsfield, a vice-president of Reynolds Metals, left the company's board of directors earlier this year in anticipation of his retirement. He also was a director of Reynolds Mining Corporation, Reynolds Jamaica Mines, Ltd., and Reynolds Research Institute.

Among many other responsibilities, he has served as vice-president and director of the National Air Pollution Control Association, a director and vice-president of the Alabama State Chamber of Commerce, a member of the Muscle Shoals Aeronautics Authority and a trustee of the Southern Research Institute, which he helped found.

Mr. Horsfield studied chemical engineering at the University of North Carolina. He started his career in 1917 with the Tennessee Chemical Company at Nashville as chief chemist. He subsequently served in various technical, engineering, research and managerial posts with the Aluminum Company of America. A recognized authority on aluminum production, Mr. Horsfield holds patents on the manufacture of alumina, aluminum, refractories, electrical embedding cements and ore beneficiation.

For several years he was based at Reynolds' executive offices in Richmond, Va., but in 1954, at his own request, was transferred back to the Alabama plant site.

Buell Acquires Norblo

Buell Engineering Company, Inc., one of the nation's leading producers of electrical and mechanical dust collecting equipment, has purchased the 49-year-old **Northern Blower Company** (Norblo) of Cleveland, Ohio.

Under terms of the acquisition, L. A. Eiben will operate The Northern Blower Division of Buell as a vice-president within the framework of the Buell organization. Norblo manufactures bag-type dust collectors and filtering equipment.

With the acquisition of Norblo, Buell will be able to offer its customers a complete range of products and systems to handle every industrial dust or air-pollution problem. The company's line of equipment now includes cyclones, electric precipitators, low-draft loss and bag-type collectors. In addition, Buell will continue to produce centrifugal and gravitational dust classifying systems.

Infilco — Houston

Lee Hiser, formerly in the engineering department of **Infilco Inc.** at Tucson, Arizona, has been ap-

pointed field sales engineer for the Southwest territory with headquarters in **Houston.** He replaces Joseph M. Young, who has been transferred to Tucson.

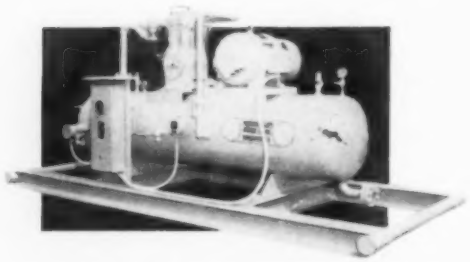
ASME — Houston

The **Gas Turbine Power and Hydraulics Conference,** sponsored by The American Society of Mechanical Engineers, is scheduled to be held in **Houston, Texas,** March 6-9. An industry-wide exhibit of new equipment for gas turbine power work will accompany the technical sessions.

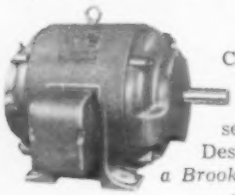
Topics of papers to be presented include turbines for gas line pumping, hydraulic prime movers, marine application of turbines, hydraulics problems in water-cooled nuclear reactors, heat recovery from gas turbine exhausts and cavitation as well as operating experience with turbine plants in various countries.

Walker L. Cisler, President of The American Society of Mechanical Engineers, and of the Detroit Edison Company, is to attend the meeting as the main speaker at the Gas Turbine Power luncheon on March 9

this unit to "PUSH" OIL OUT OF WELLS is *dependably*



powered by a BROOK MOTOR



The unit shown, built by Pressure Lift Service Co., Inc., Shreveport, La., will "push" the oil up and out of as many as eight wells at one time. *A Brook Open Drip Proof 15 HP a.c. motor* was selected to provide dependable, economical power. Despite their modest cost *there is no finer motor than a Brook.* That is why so many petroleum producers and processors are profiting from *Brook Motors.* All standard enclosures—1 to 600 HP. Send for brochure.

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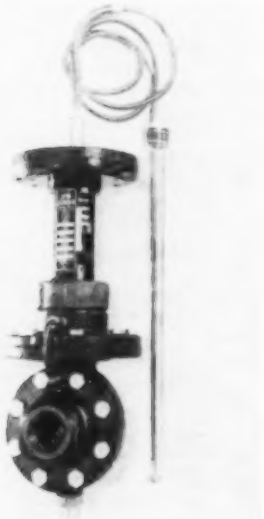
SINCE 1904 BROOK ELECTRIC MOTORS

NEW Product Briefs

. . . there is always a BETTER WAY

Piloted Control Valves

0-1 New piloted temperature control valves in ¼" - 2" sizes are now available from **OPW-Jordan Corp.**, Cincinnati 13, Ohio, for sensitive control of



pressure drops. Sliding Gate, self-lapping, self-cleaning seats insure positive tight shut-off during lock up and accurate regulation during operation. The valves are available from stock in ductile iron and bronze bodies. They are suitable for pressures to 250 psi and temperatures to 500 F. Capacities are from 12 to 6,600 pounds of steam per hour or 1 to 175 gallons of water per minute, depending on pressures.

Variable Pitch Pulley

0-2 New, highly flexible variable speed drives, with ratios up to 4:1, in the range of ⅛ to 2 hp using a combination of two variable pitch pulleys are being produced by **Maurey Manufacturing Corporation**, 2907 S. Wabash Avenue, Chicago 16, Ill. Connected by either "A" or "B" belts, one pulley is spring loaded, the other manually actuated.

The belt-seating groove of the manually operated pulley is widened and narrowed by turning a hand wheel to control the operation of the drive. Manual actuation of this pulley produces an instant inverse change in the pitch diameter of the spring loaded pulley. For example, as the groove of the manual pulley is narrowed, causing the belt to ride higher, the pull of the belt widens the groove of the spring loaded pulley for deeper belt seating. The spring tensioned movable flange of the spring loaded pulley, on the other hand, immediately takes up the belt slack as the groove of the manually operated pulley is widened. Both pulleys are offered in a size range of 3½-inch, 4-inch, 5-inch and 6-inch od, and can be purchased in combination or individually.

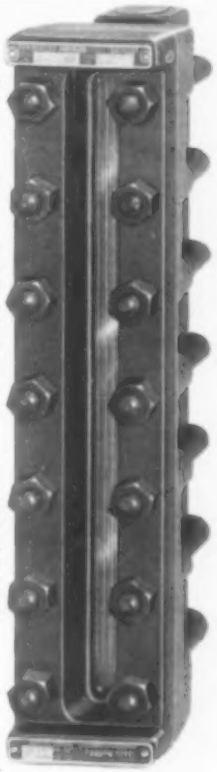
Electronic Indicator

0-3 A clearly visible electronic indicator whose use, with accessories, is to indicate values of flow, liquid level, temperature, pressure, position, input motion, % O_2, % CO_2, % H_2, pH, resistance and d-c millivolts, is announced by **The Hays Corporation**, Michigan City, Indiana.

Either one of two electronic receiver units can be incorporated for operation with suitable transmitters — a differential transformer receiver, or a slidewire receiver. Both units have a full complement of accessories which can be mounted on each, including switches and slidewires.

Features of the indicator are a 4.4 second pointer travel over the full scale, with 300 degree indication and total scale length of 12¾ inches. The scale is easily removed and replaced without recalibration. The unit is small size, compact in design, and is available in 14-gauge sheet steel, formed case.

EXTRA
ADVANTAGES
of **PENBERTHY**
LIQUID LEVEL GAGES



- **STRENGTH** — for pressures to 10,000 psi and higher.
- **ACCURACY** — clear, accurate liquid-level readings on tanks, boilers, vessels, flow lines, etc.
- **MAINTENANCE** — exclusive "raised glass" design assures perfect frame, glass, and gasket alignment. Makes cleaning and replacement economical and easy.
- **TEMPERATURE RANGE** — from sub-zero to over 750°F.
- **CUSTOM DESIGNS** — in bronze, iron, carbon steel, stainless steel, monel, other alloys as required for corrosive protection or other specific requirements.
- **AVAILABILITY** — Standard designs stocked by oil field supply stores, and mill supply houses. Special gages to order from our factory.

WRITE for your copy of our Catalog #36.

PENBERTHY

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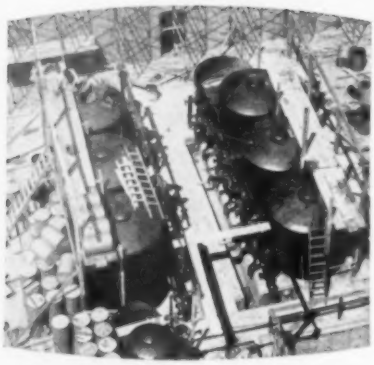
PATHWAYS OF A PIONEER

ILLCO-WAY DESIGNERS AND BUILDERS

MODERN EQUIPMENT FOR ionXchange



This picture was taken in *1943* of a Continuous *600 gpm* IonXchanger during installation at a midwestern chemical plant. The tanks are shown being loaded with ionXchange resins.

Blazing the Trail for De-I Developments

When the photograph above was made, IWT already had well over 50 large industrial ionXchangers in successful operation — yet ion-exchange in those days was still considered a "new and untried" process! Many of these pioneering IWT installations are *in use today*, and most of the early users of IWT ionXchange have *added to* and *modernized* their equipment as new developments became available.

Even today IWT is still pioneering — adding to its great stock of knowledge in this specialized field, designing and building up-to-date ionXchangers of all types and sizes for application to a wide variety of processes as well as all kinds of water-treatment, experimenting with and carefully testing new ionXchange uses, and constantly improving existing designs.

THIS EXPERIENCE CAN MEAN A LOT TO YOU

If you need pure water for high-pressure boiler make-up or process use, or if you are considering the use of ion-exchange for purification or concentration of chemical products, be sure to take advantage of IWT pioneering experience and specialized knowledge. *Call your IWT representative.*

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NEW YORK OFFICE: 141 E. 44th St., New York 17, N.Y.
CANADIAN DIST.: Pumps & Softeners, Ltd., London, Ont.

New Product Briefs (Continued)

Electric Governor

0-4 A universal electric governor for use on diesel engines, gasoline engines, steam turbines and gas turbines is available from the **Westinghouse Electric Corporation,** Pittsburgh, Pa.

The electric control unit (bottom) is the sensing element of the electric governor; it mixes and amplifies signals. The electrical summation of these variables is magnetically amplified and the resulting error signal is applied push-pull across the hydraulic actuating unit (top).

The new unit is designed for constant speed control over a 10 per cent range in 400 cycle service, and over a 30 per cent range in 50/60 cycle service.

The sensitivity and response characteristics of the governor are measured in milliseconds. The frequency circuit operates within three milliseconds of the time that even the smallest speed change occurs. Full movement of the throttle from closed position to open position (and vice versa) is accomplished in 0.035 seconds.

Some of the features of the Model EFG electric governor include standard design universally adaptable to prime movers of any make or model; isochronous in single unit or parallel units operation; independent of throttle linearity; independent of load balance per phase and load power factor; and maintaining constant speed to full capability of the engine to carry the load, including overload. A manual frequency reference potentiometer can be installed as far as 250 feet from the electric control for remote adjusting of frequency output.

Mechanical Drive Turbine

0-5 A pre-engineered, single-valve, multi-stage mechanical drive turbine specially designed to permit significant price reductions to meet petroleum and chemical industries' requirements is now being offered by **General Electric Company's** Small Steam Turbine Department.

Designed for pump and compressor drive applications, this line of mechanical drive turbines utilizes "building block" components to reduce engineering and manufacturing time cycles.

These single valve, multi-stage units are applicable to a wide range of ratings, speeds and steam conditions imposed on turbines used in the petroleum and chemical industries.

The line of mechanical drive turbines will be applicable to the following conditions: 500 to 4000 hp; 4000 to 10,000 rpm; condensing or noncondensing; throttle pressure, 100 to 850 lb per sq in. gauge; and temperatures to 900 F.

Revolution Counter

0-6 A new, miniaturized, shaft-driven revolution counter, designed and manufactured by **Automatic Timing & Controls, Inc.,** King of Prussia, Pennsylvania, counts shaft revolutions up to 1000 rpm and requires only 1¼ ounce-inch torque for dependable electrical control of a machine or system operation. Repeatability is ±0.0025 of dial range.

With its clutch energized by external momentary or sustained

switch contact, the counter will indicate revolutions of a machine drive shaft until a predetermined dial setting is reached, tripping the heavy duty control contacts. Once adjusted to range, the dial setting remains fixed for repeated operation.

The counter is available for a-c or d-c operation, with eleven dial ranges from 0-12 to 240,000 revolutions, and in numerous circuit arrangements which permit adaptability to almost any process.

Plastic Tape Sealer

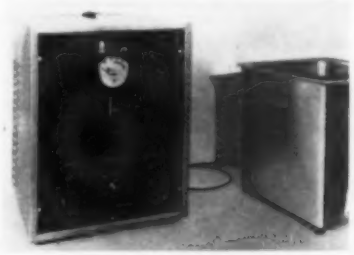
0-7 A chemically-inert plastic tape designed to seal and to permanently lubricate threaded and coupled pipe joints, has been announced by **Minnesota**

Mining and Manufacturing Co., Irvington Division, 900 Bush Avenue, St. Paul 6, Minn.

Called "Scotchrap" brand dry thread sealer, this unfused film tape can be applied in seconds and conforms to all types of pipe threads and fittings in any pipe system. It can withstand processing temperatures from the liquid-oxygen range through that of super-heated steam. It is not affected by oil traces or other lubricants in the steam line. Although non-adhesive, the tape is sufficiently cohesive to stick to its own glossy surface, as well as any pipe thread.

Ultrasonic Cleaning

0-8 **National Ultrasonic Corporation,** 111 Montgomery Ave., Irvington, N. J., announces a new unit for use where average ultrasonic energy is required. This cleaner features a 7-gallon heavy gauge polished stainless steel tank 14¾" long, 11¾" wide and 10" deep. The tank has deep-drawn rounded corners to facilitate the rinsing out of contaminants removed by ultrasonic energy, and 27.5% of the tank bottom is covered with crystals. Actual radiating surface is 48 square inches.



The 115-volt a-c single-phase 60-cycle generator, designed for continuous operation, delivers an average power output of 250 watts and produces peaks of 1000 watts. Features include one-tube oscillator, front panel switching which permits a choice of either of two transducers, forced air cooling and 3-wire ground protection. The unit can be adjusted to available line voltage and is interlocked for operator safety.

Disposable Protective Suit

0-9 **Safety First Supply Company,** Pittsburgh, Pa., has introduced a new all-purpose disposable plastic safety suit designed to protect workers in all

industrial operations involving exposure to chemicals, water and excess dust or dirt.

Priced at only $3.95, this lightweight plastic suit is resistant to most acids and alkalis and fire as well as being waterproof and unaffected by oil or grease. The light yellow polyvinyl chloride slip-over jacket and trousers fit comfortably

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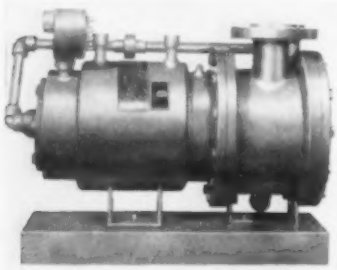
Formerly Industrial Division, Continental Gin Co.

New Product Briefs

over ordinary work clothing. Elastic tape at neck, wrists and ankles insures a tight fit for additional protection against dust, sprays and splashes.

Canned Pumps

0-10 A new series of two-stage, high-head "canned" pumps has just been introduced by **Chempump Division, Fostoria Corporation,** Huntingdon



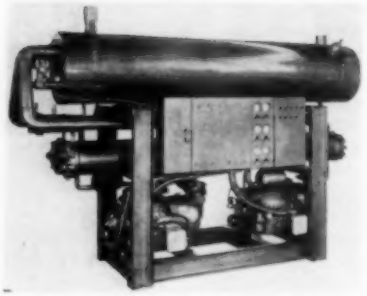
Valley, Pa. The new line, known as Chempump Series D, is designed for leakproof pumping at heads up to 600 feet. All of the advantages of canned pumps are retained.

Rotor, shaft and impellers form a single rotating assembly. Both rotor and stator are completely enclosed within corrosion - resistant, non-magnetic alloy cylinders. The pumped fluid is allowed to circulate through the motor section and serves to cool the motor and lubricate the bearings. No external lubrication is ever required. Since pump and motor are built as a single unit, there are no troublesome stuffing boxes or mechanical seals. Leakage is completely eliminated. Thus, operating costs are reduced.

Low temperature pumps for operation under 400 F are equipped with water jackets around the stator for cooling if required. High temperature models for the handling of fluids over 400 F are equipped with external heat exchangers.

Water Chillers

0-11 Packaged water chillers, which feature twin hermetic compressors with individual motors, have been introduced by **Acme Industries, Inc.,** Jackson, Mich.



The new line of 40-250 tons capacity offers a means of equalizing wear in two-compressor systems, as well as providing the added protection of two motors, either of which will keep the system in operation in the event one motor fails. Dual refrigerant circuits and control panels further insure against complete interruption of service.

An electrical switch on the control panel permits the owner to equalize the wear on the compressors and motors. If the second compressor and motor operate only 35 per cent as much as the first, for example, the switch can be used periodically to change the "lead" compressor and balance out the wear.

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The new liquid latex emulsion that bonds concrete and mortar mixes tightly and lastingly to most seasoned concrete surfaces *without having to roughen them.* This self-curing bond will adhere to eroded, cracked or irregular surfaces and also will absorb heavy impact without chipping or dusting, providing a finished surface that is slip-resistant.

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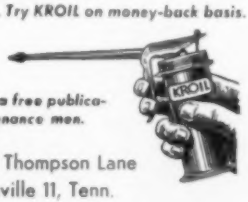

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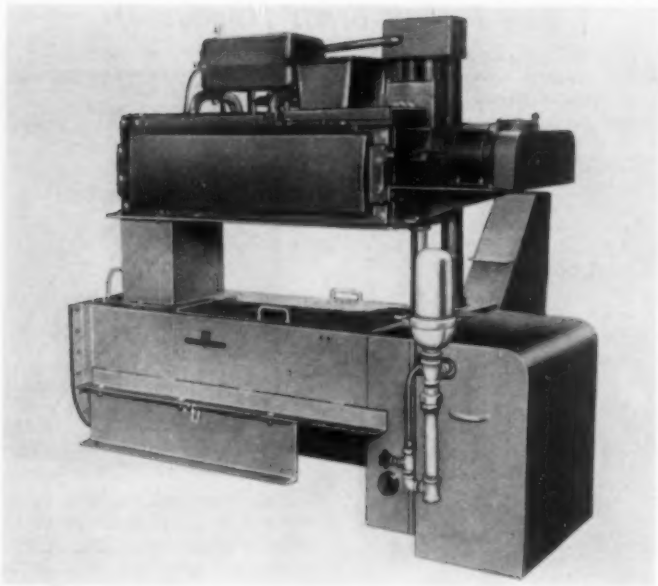


New Concept in Lime Slaking

0-12 **Wallace & Tiernan Incorporated,** Belleville, New Jersey, recently introduced a new lime slaker, the Series A-758. This slaker, by using a paste slaking technique, produces completely slaked lime in as little as 5 minutes, and uses only a 2-to-1 water-to-unslaked lime ratio. The slaker needs no initial heating and no insulation, thus making the whole unit compact.

The heart of the new slaker is a torque-actuated valve which automatically controls the flow of water to the slaking compartment. This maintains constant paste consistency, even with varying quicklime quality or quantity. The mixing paddles operate at low speed, reducing not only power costs, but also maintenance troubles from abrasion. Grit is washed to prevent waste, then removed automatically.

Insulation Cement

0-13 **Thermold Products Company,** Grandview, Mo., recently introduced a new product in the field of thermal insulation — castable quick-set, one-coat insulation cement. It is unique in the fact that, without shrinkage, it can be packed by hand, troweled, injected, palmed, sprayed, or poured to any thickness.

An unusual feature of this cement is re-use of the set or dried material. It can withstand freezing with no deterioating effects. It is non-rusting and non-corrosive to metal and materials. It can be applied to such hard-to-cover materials as fiberglass board and blanket, rock

cork board, foam glass block, rock wool blanket, etc., without the use of hex wire. It will not shrink, blister or drip and will give a smooth hard finish.

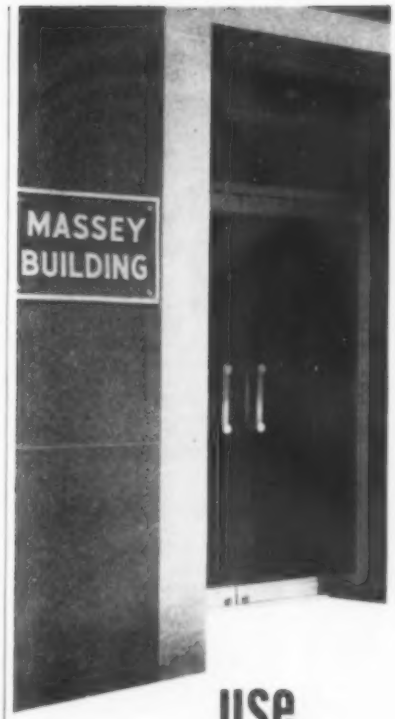
Pre-molded jackets for pipe fittings of any size can be made in two pieces and are easily applied. The price is low enough for practical use.

Metalkase Fire Brick

0-14 **United States Steel's Tennessee Coal & Iron Division** has teamed up with the **H. K. Porter Company Refractories Division of Harbison-Walker Company,** Pascagoula, Mississippi, to produce the first Metalkase fire brick ever manufactured in the South.

Metalkase brick is a refractory fire brick with a metal cover, the cover being stapled to the brick at the time of manufacture. It is used principally as a lining in open hearth furnaces and other special high temperature furnaces.

With the steelmaking trend in



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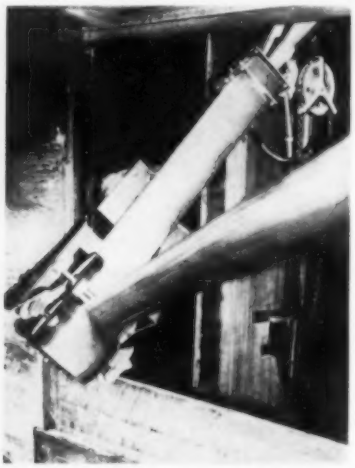
New Product Briefs (Continued)

the United States moving toward increased use of what are called basic refractories, it has become desirable to strengthen individual fire bricks with metal to decrease spalling, a particular problem with this type of brick.

Box Car Loading

0-15 The "Swiveloader," developed by **Stephens-Adamson Mfg. Co.**, Aurora, Ill., fills and trims the largest box cars



quickly while eliminating dust exposure for the operator.

The standard unit mounts easily to wall or structural supports. No loading platform or gangplank is required. The operator swings the Swiveloader inside the box car door. Without entering, he can swivel the thrower and direct stream of material toward one end of car. Then he simply swivels the unit around and directs stream to the other end without stopping the weed and material. The unit operates on a centrifugal action throwing principle. The standard duty Swiveloader is available in a 10" wide belt size.

The operating principle of the "Hi-Type" model is the same as that of the "Standard Duty" model. However, it is designed to be swung over three 20" high grain doors. It is available in 10" to 16" belt sizes.

Reverse-Power Relay

0-16 A new directionally-controlled timing relay for reverse - power, three-phase applications is available from the **Westinghouse Electric Corporation**, Pittsburgh, Pa.

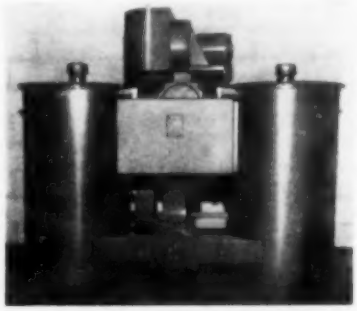
The relay is rated 120 volts line-

to-line, five amperes. The main contacts can close 30 amperes at 250 volts d-c and carry this current for sufficient time to trip a circuit breaker.

Some of the features of this new relay include high sensitivity of 0.02 ampere, 120 volts at maximum torque, adjustable timing range from 2.0 to 40 seconds, small-size case, and low burden. The relay is completely self-contained.

Industrial Dehumidifier

0-17 **Universal Dynamics Corp.**, Box 9814 A, Arlington 9, Virginia, has announced the new UNA-DYN Model A75, a completely automatic, "packaged"



adsorption dehumidifier with new high capacity adsorption and reactivation systems and efficient high flow-low flow transfer valves. The unit handles as much as 700 cfm and can remove 300 lb of water in 24 hours. Used originally for controlled humidity storage, the dehumidifiers are also employed for dry air in processing applications, humidity control in unheated spaces, low temperature installations, and also in combination with cooling equipment. It features "plug-in" installation and has a minimum of

moving parts and thermostatically protected heaters. It may be used with either electrical, steam or gas reactivation.

Relief Valve

0-18 A new non-chattering relief valve for liquid service has been announced by **J. E. Lonergan Co.**, 211 Race St., Philadelphia, Pa.

The new Hydro-Valve is designed specifically to be stable. It will not drum, chatter, or hammer on any application, either bypass or emergency relief. Hammering is eliminated by a special design of the throat, seat, and baffle construction.

The Hydro-Valve is available with a bellows if necessary to keep working parts away from contaminants, and corrosive or viscous fluids. Because chatter and its associated bellows flexing action is eliminated, bellows life is greatly extended. The valves are available with all body and trim materials used by the industry. The plain valve comes in regular sizes from 1 to 8 inches. The bellows version is available from 1½ to 8 inches in size.

Anti-Rust Aerosol

0-19 **Industrial Supply Division, Sprayon Products, Inc.**, Cleveland, Ohio, has introduced an anti-rust aerosol for protection of metal parts.

Applied as a finely-dispersed mist, it penetrates into joints and crevices, and actually displaces moisture already present, forming a very thin waxy film that clings tightly, yet is quickly removed by a light solvent.

The spray was developed to protect machined parts between operations or in storage. It is also used on precision instruments, tools, and dies, incomplete assemblies, motors, and hand tools.

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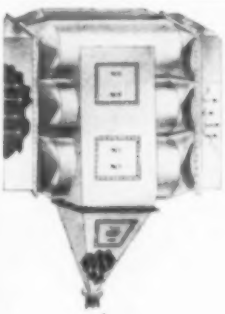

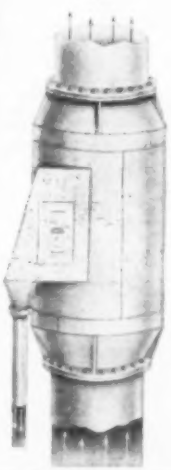

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THE CONTENTS, and the purpose of this book, are given in the following Foreword; page 1 . . .

"Valve economy is an objective of good plant management at all times. It is more important than ever today because of the greatly increased costs of valve replacement and maintenance that have paralleled the rise in all expenses of plant operation.

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This booklet has been prepared for plant management and supervisors, to explain and illustrate the principal causes of valve failure, how to prevent similar failures, and how to repair damaged valves. In addition to general instructions for installation and maintenance, it includes several examples of actual valve damage and destruction which have been brought to the attention of Jenkins Engineers. In each case the relatively simple precautions that would have prevented such needless waste are clearly explained, in non-technical language."

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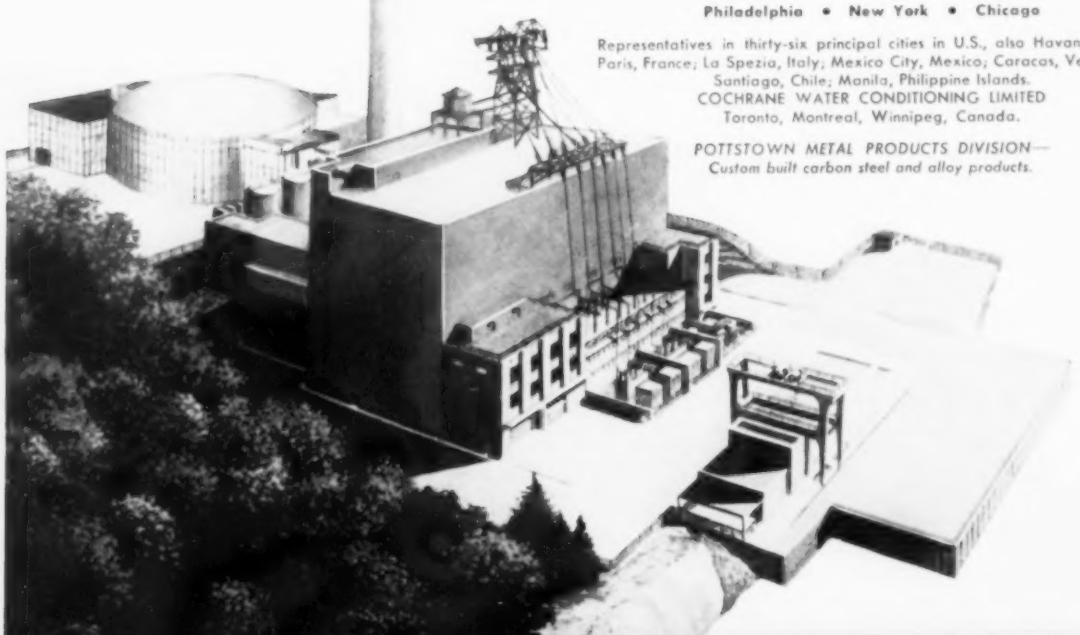

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